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SIXTH ANNUAL REPORT

NORTH CAROLINA

Agricultural Extension Service

B. W. KILGORE
DIRECTOR

RALEIGH AND WEST RALEIGH

YEAR ENDING JUNE 30, 1920

NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING
NORTH CAROLINA DEPARTMENT OF AGRICULTURE
AND
UNITED STATES DEPARTMENT OF AGRICULTURE
COOPERATING
Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914

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Cooperating

RALEIGH
MITCHELL PRINTING COMPANY
STATE PRINTERS
1921

LETTER OF TRANSMITTAL

Raleigh, N. C., January 1, 1921.

North Carolina Agricultural Extension Service
Office of the Director

To His Excellency, T. W. Bickett,
Governor of North Carolina.

Sir:—I have the honor to submit herewith report of the operations of the North Carolina Agricultural Extension Service, conducted jointly by the North Carolina State College of Agriculture and Engineering and the North Carolina State Department of Agriculture, in coöperation with the Federal Department of Agriculture, for the year ended June 30, 1920. This work is under the immediate direction of the "Joint Committee for Agricultural Work" provided for in Chapter 68 of the Public Laws of 1913, and the report is made in accordance with the requirements of the Act of Congress approved May 8, 1914, and known as the Smith-Lever Act.

Very respectfully,

B. W. Kilgore,
Director.

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	P. T. Schooley—Extension Horticulturist

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F. O. BARTEL.....Junior Drainage Engineer

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A. S. CLINE.....Assistant Director, Black Land Branch Station
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FARM DEMONSTRATION WORK

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H. H. B. MASK.....Assistant State Agent
E. S. MILLSAPS.....District Agent, Piedmont District
T. D. MCLEAN.....District Agent, Central District
J. M. GRAY.....District Agent, Mountain District
O. F. MCCRARY.....District Agent, Northeastern District
E. W. GAITHER.....District Agent, Southeastern District

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Granville	J. L. DOVE	Oxford

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Hyde	JESSE MURRAY	Swan Quarter
Iredell	A. J. AREY	Statesville
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Swain	FRANK FLEMING	Bryson City
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Wilson	B. T. FERGUSON	Wilson
Yadkin	M. W. MACKIE	Yadkinville
Yancey	F. E. PATTON	Burnsville

NEGRO AGENTS

J. D. WRAY, Farm Makers' Club Agent, Assistant in Charge Negro Boys' Club Work	Greensboro
L. E. HALL, District Agent	Chadbourn

LOCAL AGENTS

E. F. COLSON, Ansonville	Anson County
W. D. BROWN, Winton	Hertford County
OLIVER CARTER, Parmele	Pitt, Edgecombe, and Martin Counties
D. D. DUPREE, Wilmington	New Hanover, Pender, and Brunswick Counties
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E. C. LACKEY, Winston-Salem	Forsyth, Davie, and Yadkin Counties
C. S. MITCHELL, Gatesville	Gates County
J. W. MITCHELL, Vineland	Columbus and Bladen Counties
T. B. PATTERSON, Salisbury	Rowan County
H. E. WEBB, Greensboro	Guilford, Rockingham, and Alamance Counties
F. D. WHARTON, Henderson	Vance, Warren, and Granville Counties
L. H. ROBERTS, Raleigh	Wake County
H. G. FORNEY, Bricks	
R. C. WARD, Laurinburg	

HOME DEMONSTRATION WORK

MRS. JANE S. McKIMMON	State Home Demonstration Agent
MISS LAURA M. WINGFIELD	Assistant State Home Demonstration Agent
MRS. EUNICE P. McCRARY	Tidewater District Agent
MRS. ESTELLE T. SMITH	Eastern District Agent
MRS. CORNELIA C. MORRIS	Central District Agent
MISS MAUDE E. WALLACE	Piedmont District Agent
MRS. MITTIE M. HENLEY	Mountain District Agent

HOME DEMONSTRATION AGENTS

Alamance	Miss Inez Ward	Graham
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Bladen	Mrs. Anna Mary McDowell	Elizabethtown
Brunswick	Miss Jennie L. Baker	Southport
Buncombe	Miss Annie Lee Rankin	Asheville
Cabarrus	Miss Lena Barrow	Concord
Catawba	Mrs. Anna McKinnon Pegram	Newton
Cleveland	Miss Bertha Herman	Shelby
Columbus	Miss Ruth Conrath	Whiteville
Cumberland	Miss Elizabeth Gainey	Fayetteville
Davidson	Miss Gertrude Alexander	Lexington
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Edgecombe	Miss Winifred Young	Tarboro
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Franklin	Miss Pauline Smith	Louisburg
Gaston	Miss Nell Pickens	Gastonia
Granville	Mrs. A. L. Capehart	Oxford
Greene	Miss Laura E. Williams	Snow Hill
Guilford	Miss Ola Stephenson	Greensboro
Halifax	Miss Ethel Leatherwood	Roanoke Rapids
Harnett	Miss Fannie E. Brooks	Lillington
Hertford	Miss Myrtle Swindell	Winton
Iredell	Miss H. Celeste Henkel	Statesville
Jackson	Miss Mary Feimster	Sylva
Johnston	Miss Mamie Sue Jones	Smithfield
Lee	Miss Gertrude V. Little	Sanford
Lincoln	Mrs. Florence R. Winn	Lincolnton
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Martin	Miss Esther Gluyas	Williamston
Mecklenburg	Miss Martha Creighton	Charlotte
Moore	Miss Bertha Proffitt	Carthage
Nash	Miss Louise Howell	Nashville
New Hanover	Miss Florence Jeffress	Wilmington
Northampton	Miss Nancy McLawhorn	Jackson
Onslow	Miss Margaret Martin	Jacksonville
Orange	Miss Elizabeth Cornelius	Hillsboro
Pasquotank	Miss Marcia P. Albertson	Elizabeth City
Pender	Miss Eva Logan	Burgaw
Perquimans	Miss Helen Gaither	Hertford
Person	Mrs. Lila Melvin Rhyne	Roxboro
Pitt	Miss Mabel Bradsher	Greenville
Richmond	Mrs. John Sandy Covington	Rockingham
Robeson	Miss Flax Andrews	Lumberton
Rockingham	Miss Mazie Kirkpatrick	Reidsville
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Transylvania	Miss Lula M. Cassidey	Brevard
Union	Miss Lillian Cole	Monroe
Vance	Mrs. J. K. Plummer	Middleburg
Wake	Mrs. Chloe Blalock	Raleigh
Warren	Miss Addie Brawner	Warrenton
Washington	Miss Alice McQueen	Plymouth
Wayne	Miss Elizabeth Bogle	Goldsboro
Wilson	Mrs. Willie White Boyette	Wilson

The members marked with * are members of the Joint Committee for Agricultural Work, and the Station is under their direction.

†In coöperation with the United States Department of Agriculture.

SIXTH ANNUAL REPORT

OF THE

NORTH CAROLINA AGRICULTURAL EXTENSION SERVICE

For the Year Ending June 30, 1920

Being the Fourteenth Year of Extension Work in the State

B. W. KILGORE, *Director*

The year just closed reflects a tendency of the extension service to become a more compact, efficiently functioning organization. While county agents and specialists have continued their work in placing concrete demonstrations on farms in many counties, they have been called upon for more and more help in organizing community clubs of farmers for special objects and have perhaps reached a larger number of persons through group meetings than was possible in the past.

The idea of personal service, while not being lost sight of, has been more limited, and the principle applied of not doing for the farmer what he can be instructed to do for himself through the medium of demonstrations and talks which draw attendance from whole neighborhoods and townships.

In some cases county councils have been formed to assist agents in carrying on their work. These councils review plans for the year and decide on the projects to be undertaken. They also play a vital part in arousing their communities to the need for concerted action and in advancing the agricultural and home interests of their counties.

The women members of home demonstration clubs have organized a State Federation of Home Bureau, the second such organization in the United States, and the first in the South, and in many counties the local demonstration clubs have elected councils to complete a county home bureau organization. The men agents in most instances have begun the organization of farm bureaus and have already obtained the support of leaders in mapping out their programs of work for the new year.

It was inevitable that the extension service should feel the effects of readjustments now going on in the life of the nation, and during a part of last year the higher salaries paid in commercial work caused a number of resignations among county agents. Some of these agents have since returned to the extension service and the number of organized counties now compares favorably with that of any year, with the exception of the war years.

STATISTICAL SUMMARY

Some idea of the variety and extent of the work of the extension service in North Carolina may be obtained from the following statistical review:

Reports from county agents show a total of 7,435 meetings at which agents and specialists spoke to more than 900,000 persons. In carrying on their work members of the extension service wrote 282,818 letters, mailed out 278,565 bulletins, and had 3,840 articles published in newspapers and magazines.

Assistance was given to 153 communities in organizing farm and home interests; membership in these new organizations total 8,068. Reports show a total of 275 coöperative marketing organizations which did a business of $830,626 during the year.

Demonstrations in field crops were conducted on 10,421 farms and orchard demonstrations on 6,645, containing 440,806 trees.

Demonstrations in growing and handling livestock numbered 35,069, which includes 440 animals for which assistance was given in marketing. Through the efforts of the agents 21 dipping vats were constructed during the year, making a total of 95 vats built, in which 38,490 head of cattle were dipped through influence of county agents.

Sixty-nine thousand, eight hundred and fifty-one services were rendered by agents in handling fertilizer, manure, and lime, and 39,000 bushels of good seed placed among farmers.

Reports of new construction work include 40 silos built; 4,263 farm buildings erected or improved; 785 water systems installed; 1,954 light systems put in; 189 telephone systems; 6,162 home grounds improved, and 8,479 improvements of sanitary conditions. There were 126 drainage systems installed during the year, which drain a total of 20,808 acres. Agents and specialists assisted in laying off 1,410 terraces on 18,060 acres. Demonstrations on the use of improved farm implements total 19,685.

Through the efforts of agents 27,651 new home gardens were planted and the home demonstration clubs filled 1,509,773 containers with fruits and vegetables; brined 63,779 gallons of vegetables, and dried 75,552 pounds of fruits and vegetables.

Other services rendered by the extension service include 5,086 home conveniences installed; 400 potato storage houses planned; 241 wood lots improved; 3,671 sugar plant demonstrations; 25,639 bales of cotton classed; 247 community and county fairs held, and 150,000 bulletins printed.

Members of the extension service forces in carrying on their work during the year made 98,017 visits, traveled 825,507 miles, held 13,250 meetings, and received 75,479 visits from farmers and their wives. The total club enrollment of boys and girls, men and women, was 23,957.

CHANGES OF STAFF

Changes in staff at headquarters since the last annual report include the following:

Resignations: Laura M. Wingfield, assistant state home demonstration agent; E. C. Brintnall, dairy office; J. W. Schloss, beef cattle office; S. J. Kirby, plant club agent; R. A. Jekle, extension plant pathologist; M. R. Smith, extension entomologist; Paul T. Schooley, extension horticulturist; S. G. Rubinow, assistant to the director; F. H. Jeter, agricultural editor; Charles S. Jones, specialist in marketing livestock; Bolling Hall, assistant in marketing fruits and vegetables; A. N. Pratt, assistant in marketing perishables.

Appointments: B. F. Brown, chief division of markets; J. H. Henley, specialist in credit unions; W. W. Magill, assistant in marketing fruits and vegetables; R. W. Green, agricultural editor; Maude E. Wallace, assistant state home demonstration agent; W. B. Mabee, extension entomologist.

COOPERATION WITH OTHER INSTITUTIONS AND AGENCIES

Cordial support of the Agricultural Extension Service was received from many other educational institutions and agencies, including the North Carolina College for Women, the State Department of Education, Elon College, and the Negro A. & T. College.

Banks and commercial organizations have assisted agents and specialists in promoting club work and community improvements within the counties, and the press has helped loyally in encouraging better farming and rural life.

Through the courtesy of the Hamilton Millinery House, a week's instruction in millinery was given for home demonstration agents in counties accessible to Charlotte.

FARM DEMONSTRATION WORK

Satisfactory demonstration work through men farm agents was carried on in 66 counties during the year and include demonstrations in growing cotton, corn, tobacco, peanuts, hay, small grains, white and sweet potatoes, and forage crops. In addition, agents assisted livestock owners in providing better pastures, feeding, and the use of purebred sires.

Many county agents were called upon during the year for help in promoting farmer's organizations. Some of these associations were concerned chiefly with coöperative marketing, a though others included educational, social, and recreational features. At the end of the year there were 34 counties with centralized farmer's organizations and 43 counties with one or more community organizations, making a total of 456 for the state. This is an increase over organizations reported the year before of 32, 27, and 127 respectively.

Reports of agents show that farmer's coöperative organizations engaged in buying and selling number 267, handling a total business of $830,000 during the year at an estimated saving of $173,000. More than 10,000 acres on 1,609 farms were devoted to corn growing demonstrations under the supervision of county agents, on which the average yield was 48.9 bushels an acre, this figure being the highest yet achieved and comparing with an estimate state average for corn of 22 bushels an acre.

BOYS' AGRICULTURAL CLUBS

Under the direction of H. H. B. Mask, Assistant State Agent, efforts have been made to assist county farm agents in planning and organizing their club work. A county plan for club work was furnished each agent early in the year so that it might be incorporated in his county plans. Although most of the agents included club work in their plans, only 43 started club work and seven of these did not report results.

The organizing of 121 community clubs in 25 counties have made it possible for some of the agents to carry on club work more effectively, especially when local leadership has been developed among the members of these organized clubs.

The total reported enrollment in livestock and plant clubs was 2,017, divided as follows: Poultry, 822; pig, 742; corn, 259; cotton, 73; peanuts, 31; tobacco, 28; sheep, 20; Irish potatoes, 18; sweet potatoes, 7; soybeans, 6; calf (beef), 6; and calf (dairy), 5.

Club members produced plant and animal products with an estimated value of $68,641 and took $2,123 in cash prizes for exhibits at fairs.

WORK WITH NEGROES

Through the negro boys' and girls' club work many adult negro farmers are beginning to practice better farming methods, and some of the results include 50 farmers who planted winter cover crops for the first time; the purchase of 88 purebred hogs, 75 purebred chickens, and a number of high-grade cows. They have also built 16 new homes, remodeled 23, and have planned to build 27 new barns. Sixty-five negro farmers state that they will pay cash for their fertilizer in 1921.

Complete reports and estimates place the total value of products produced by boys and girls and adult club work at $344,535.90, of which $191,723 represents the products raised by boys and girls. The total enrollment in boys and girls and adult club work reached about 5,000, with the largest number enrolled as members of poultry clubs, corn clubs being second and pig clubs third. Corn club members report an average yield of 53.5 bushels of corn an acre.

HOME DEMONSTRATION AND GIRLS' CLUBS

Home demonstration agents in 59 counties reported a total membership in demonstration clubs of 18,498, about equally divided between women and girls. Agents held 8,340 meetings during the year, with a total attendance of 379,948. Wake and Wayne counties report the largest club enrollment, with the greatest number of clubs and best attendance at meetings.

Special emphasis was given to home millinery during the year in 42 counties where demonstrations in making over old hats as well as in making new ones were given, these proving very popular in every instance. Attention was also given to dress designs in 49 counties, where 1,214 clothing demonstrations were held.

Perhaps the most far-reaching work of the home demonstration division was that part of the program which had to do with the selection, preparation, and nutritive value of foods. These covered the subjects of vegetables, dairy products, poultry, bread making, child feeding, invalid cookery, and use of the steam pressure as well as many demonstrations in canning and preserving fruits and vegetables. Through the efforts of home demonstration clubs, hot lunches were established for the first time in 42 schools. "Better bread" campaigns were held in Buncombe, Franklin, Granville, Greene, Hertford, Iredell, Perquimans, Sampson, Stanly, and Wayne counties and aroused great interest among the school children and their parents.

Although the high price of sugar at canning time reduced the amount of fruits, jellies, preserves, and jams put up by club members, a total of 1,509,772 containers of food products were filled, having a total estimated value of $528,061. There were 487 canning demonstrations given by club girls, and 102 demonstrations in drying fruits and vegetables.

To spread the gospel for "good tools and good work," 12 counties put on what was called "Housekeepers' Week." In each case local merchants cooperated with the home demonstration agents in lending equipment for demonstrations during "Housekeepers' Week," and after the week was over reported increased sales of household conveniences and kitchen equipment. The dairy specialist of the extension service attended a number of these "Housekeepers' Weeks" and demonstrated the making of butter in different types of churns. Other features of the week included cooking with steam pressure and fireless cookers, making muscadine grape products, use of electric washing machine, electric iron, and home lighting plants.

Many of the girls' clubs report that they have made over their old furniture and added beauty to the interior of their homes through treating floors and walls, making draperies, rugs, covers, and curtains of simple materials. Home agents have assisted them by advice and instruction in the art of dyeing and interior decoration. The appearance of many home grounds has been improved through the planting of shrubs, trees, and flowers, making use of native flora wherever possible.

Women agents assisted in judging the exhibits at 91 community fairs, which are regarded by the agents as fine schools for the people. All the judging is done before the public and explanations given for the placing of the exhibit. Many of the community fairs afterwards sent their best exhibits to the county fair, and the best of these were later taken to the State Fair at Raleigh, where the home demonstration division had a whole building allotted for an elaborate exhibit. Women agents in 33 counties have formed county councils to act in an advisory capacity and assist in organizing county home bureaus. These organizations have been federated into a State Home Bureau, as the result of a meeting held during the Farm Women's Convention in August.

Special attention was given in handling milk and dairy products and the use of milk, especially for children, the home agents having assistance of dairy specialists from Raleigh in 27 counties of the state.

Organized poultry clubs were reported in 25 counties, with a total enrollment of 1,928 girls and 696 women. They received instruction through A. G. Oliver, State Poultry Club Agent, and raised about 140,000 chickens during the year. Club members entered many birds at community and county fairs and sent a number of entries to the State Fair at Raleigh.

AGRONOMY

During the year 24 counties have received aid in community cotton improvement through the selection and tests of different varieties. The aim has been to obtain strains of cotton adapted to the communities and to distribute seed of these improved strains so that the community may specialize on the cotton best adapted to its condition. During the coming year more than 75,000 bushels of pure seed of improved strains will be grown under the supervision of the Division of Agronomy and county agents. Increase yields of from $5 to $60 an acre more than the unimproved varieties grown in the same community are reported, the average of tests covering five years, being $28.97 more an acre from the improved seed.

Comparative tests with the highest yielding strains of short and long staple cotton shown because of differences in yields the difficulty in keeping long staple seed pure with long staple cotton should bring 32 cents a pound for lint when the short staple is selling for 20 cents a pound, in order to give the same acre return.

Special efforts have been made by the division to interest the growers of the Piedmont and mountain sections to produce more soybeans. Tests of four varieties and soybean campaigns have been carried on in Bladen, Person, and Columbus counties, and similar work mapped out in other Piedmont sections.

Thirteen communities have been encouraged to produce better corn through seed selection, and the Cherryville community corn show, held for the second time this year, aroused much interest in selection of seed corn.

Variety tests of wheat have been conducted in six communities and during the fall 340 bushels of pedigreed Leaps Prolific were distributed to 38 growers in 22 counties. Tests to determine rate and date of seeding wheat have shown from five years' average that six pecks an acre planted between October 15 and November 1, gives the best results. The tests indicate that most growers in the Piedmont section are reducing their yields from two to six bushels an acre by planting from ten days to three weeks later.

Other activities of the division have included soil improvement through good rotation, growing of legumes, and the better use of fertilizer and lime.

Extension work with sugar plant has been continued, including the production of maple sugar, sugar beets, sugar cane, and sorghum. The sorghum crop in the state last year yielded syrup with a value of $3,676,000, or about as much as the total for the oat crop.

ANIMAL INDUSTRY

One of the unique features of extension work in animal industry was the handling of the year's wool clip of the state. Arrangements were made in the face of the demoralized wool market for growers to pool their wool and ship to a mill at Elkin, where it was made into blankets for the farmers. The wool was graded by George Evans, of the division, and as the result of being marketed in the form of blankets brought a return to growers of about 55 cents a pound. Sheep shearing and demonstration schools to the number

of 54 were held in the state in coöperation with county agents, and 238 purebred female and 27 male sheep were placed on farms in the state.

In connection with beef cattle extension work, many permanent pastures have been established, especially in mountain counties, through the efforts of county agents and members of the Animal Industry Division. Several sales of beef cattle were arranged in coöperation with the Division of Markets and encouragement given to the Hereford and Aberdeen-Angus breeders, who have organized associations and held sales within the year.

Working through county farm and home agents, A. G. Oliver has maintained poultry club work on a successful basis, with a total of 3,200 members enrolled in clubs. There were 1,178 birds and 137 dozen eggs exhibited at fairs, winning a total of about $1,000 in premiums.

Through the efforts of the swine extension office 101 purebred hogs were placed on North Carolina farms in addition to those so placed by county agents, and four public sales of hogs were held. In addition to pig club work, the swine extension office conducted a number of butchering, judging, meat cutting, and pasture grazing demonstrations, and assisted 90 farmers in feeding and caring for their herds through personal visits.

Production work among cheese factories with the aim of obtaining a more uniform product has been carried on under the direction of J. A. Conover. There are now 30 mountain cheese factories, two new ones having been established during the year. Cow testing associations now have about 300 cows under test, and the dairy office is carrying on register of merit work with 107 cows, 22 of which have produced more than 50 pounds of butter in one month. Bull associations in the state now number nine, with a total membership of 718 farmers who own 52 bulls. Through the efforts of the dairy office and county agents, 449 family cows were placed on farms, many of them in the Coastal Plains section of the state. In order to encourage home butter making the home demonstration agents have received assistance from specialists in the use of churning outfits in a number of counties. Ten dairy schools were held in the mountain section during the year.

In all, members of the Division of Animal Industry have addressed 384 meetings, with a total attendance of 25,528 persons, and have written 13,556 letters in connection with their extension program.

ENTOMOLOGY

Increased interest in honey production has featured the extension work in Entomology during the year. Many local meetings of bee-keepers were held and instructions given in handling bees and marketing honey. A very creditable exhibit of honey and bee-keeper's supplies was arranged for the State Fair in the fall. Through coöperation with the divisions of Horticulture and Pathology and with county agents, many bearing orchards have been sprayed for the control of insects and plant diseases.

During the outbreaks of cotton leaf louse and fall army worms county agents and farmers were supplied with information on controlling these insects. Considerable attention has also been given to farmers in territory recently invaded by the boll weevil, and literature telling them how to meet boll weevil conditions has been prepared and distributed. Other lines of work include potato spraying, cabbage dusting, control of corn stalk borer, and advising on safe dates for planting wheat.

HORTICULTURE

Because of increased demands for horticultural assistance the work has been organized on the different projects basis so that specialists could deal with groups of persons rather than individuals. Plans are now carried out largely through the county agents and assistance of local organizations of

fruit growers, boards of trade, and chambers of commerce. Meetings were held in 38 counties with a total attendance of 5,780 persons. It has been found that pruning and spraying are the two limiting factors of apple and peach production in North Carolina, and because of this, much attention has been given to these demonstrations. Twenty-seven pruning and spraying demonstrations were held in 11 counties during the year.

Under the plan of having one or more one-acre demonstration home orchards in each county, a number of such orchards were located in coöperation with the county agents during the year. About 150 of these orchards have already been planted and the majority of them are being developed satisfactorily.

To encourage the production of sweet potatoes, a special sweet potato exhibit car visited 22 counties, traveling 1,100 miles with stops at 30 towns, resulting in plans for storage houses to the number of 400 being distributed.

The Division of Horticulture was instrumental in arranging for the first Western North Carolina Apple Show, which was held in Asheville in October. The purpose of this show was to stimulate the greater production of high quality apples, the increased tonnage of which would result in a better marketing system. In connection with the show a program was arranged dealing with problems of production and marketing, which included national authorities on horticultural practices. One result of the show was the formation of the North Carolina Horticultural Society, a medium through which great developments of the fruit growing industry of the state is anticipated.

MARKETS AND RURAL ORGANIZATION

Increasing interest in cotton warehouses is shown by the number of requests for assistance coming from many communities to the Division of Markets. Visits have been made to 22 towns interested, where conferences and meetings were held and advice on organization, plans and construction of cotton warehouses were given.

Considerable attention has been given to inspection and supervision of warehouses applying for admission under the state warehouse system and federal system. Twelve warehouses have been licensed and are now in operation.

Since December 1, 1919, the Division of Markets, through its five branch offices and the Raleigh office, has graded a total of 23,339 bales of cotton from samples furnished by ginners, and certificates showing grade and staple were mailed to owners.

Efforts have been made to assist cattle men in marketing cattle and a list of feeder and stocker cattle for sale was compiled and distributed to assist in the movement of these animals. A cattlemen's association has been formed in Avery, Mitchell, and Yancey counties, which held a coöperative sale of feeder and stocker cattle at Spruce Pine in September. Assistance has been rendered growers in disposing of fat cattle within the state instead of shipping to northern markets, as in the past. Prices received in North Carolina markets have in many instances been from ½ to 1½ cents a pound above northern markets, freight and "drift" considered.

Where coöperative hog shipments have been considered by farmers, local markets have advanced from 1 to 2 cents a pound, although no shipments were actually made. Eleven counties have become interested in coöperative hog shipments. There is really no surplus of hogs in the state and coöperative shipments are necessary only where local prices have been forced down during the height of the marketing season. Coöperative shipments have demonstrated that growers need not depend on local markets, and this in turn stimulated hog production.

Wool growers have received assistance in marketing their wool in the face of a demoralized market and pooled wool was made into blankets by a mill at Elkin, which assured growers of a better price for the wool through the sale of these blankets.

Credit unions have shown a healthy growth, there now being 33 of them in operation, with combined resources of $102,103.12 on September 30, 1920.

In addition to issuing market news and the farmers' market bulletin the Division of Markets has made surveys of the soybean and cowpea seed supply; and studied the marketing of sweet potatoes, apples and truck crops. A beginning has also been made to a standardization of grades and inspection service for perishable products, and a special news service for apples and strawberries maintained during the shipping seasons.

FARM DRAINAGE

During the past seventeen months, 36 farms, situated in 18 counties, have been visited for the purpose of giving assistance and advice in tile drainage. The areas of these tracts ranged from 5 to 1,100 acres, with a total area of 2,400 acres. Preliminary surveys for tile drainage have been made and reports issued on 26 farms, with a total of 1,200 acres. Approximately 20,000 feet of tile have been installed on these farms.

Sixty-one farms, situated in 16 counties, have been visited for the purpose of giving assistance in the location and construction of terraces to prevent hillside erosion; the total length of terraces laid out being approximately 186,000 feet, or 35 miles.

Nine examinations of a preliminary or reconnaissance nature have been made in drainage districts and reports issued covering a total area of about 41,000 acres.

FAIRS AND EXHIBITS

A total of 246 fairs were held, including 38 negro fairs. Premiums authorized totaled $4,696.56 and expenses of judges were $922.05. Efforts were made to encourage the social and educational side of these fairs, especially in the case of community fairs, where county agents and members of the extension service acted as judges and explained the reasons for awards, thus making them more truly educational.

Among the special fairs held, the Western North Carolina Apple Show was the most successful, and served to bring to the attention of the state and many visitors from other states the possibilities of Western North Carolina as an apple-producing section. About 25,000 persons attended this, the first apple show to be held in the state.

The community, county, district and state fairs have helped to arouse more interest in home conveniences for the rural housewife through exhibits placed in coöperation with the members of the extension service staff.

PLANT PATHOLOGY

In 1920 about 1,000 acres of cotton were planted by coöperative growers with anthracnose-free seed, from which about 20,000 bushels of high-grade seed will be obtained for use in 1921.

Striking results with Dixie wilt-resistant cotton were obtained in Robeson County, with yields of 1,300 to 1,500 pounds of seed cotton compared to yields from other varieties of about 300 pounds to the acre. Tests of Dixie were made in Anson, Edgecombe, Johnston, Pitt, Robeson, Sampson, and Wayne counties in 1920.

The "sweet potato special" exhibit car carried exhibits of diseases and control methods, and literature was distributed to growers at 30 stops in 22 counties.

Spraying demonstrations for the control of plant diseases were made in apple orchards in Buncombe, Madison, Polk, Yancey, and Avery counties, and tomatoes were sprayed for late blight in Avery and Mitchell counties. Treatment of Irish potatoe seed and spraying of the vines demonstrated the possibilities of controlling wilt and Rhizoctonia.

FARM MANAGEMENT

A survey of dairy farms in Mecklenburg County showed that only twenty per cent of the farms studied were making more than expenses out of their dairy herds. Twenty-five per cent of the farmers producing milk and delivering it to consumers showed costs slightly below the average. Fifty per cent at slightly above the average cost, and twenty-five per cent considerably above the average. Fifty per cent of the farmers in this group made profits of from 1 to 10 per cent above the cost of production. Twenty-five per cent sustained slight losses, while an equal per cent of them sustained losses which would drive them out of the business in a short time if there had not have been other more profitable farm enterprises.

In coöperation with the office of Farm Management of the U. S. Department of Agriculture, analysis and tabulation of the survey of 320 Catawba County farms, covering two year's operations, was continued and manuscripts are being prepared for publication in 1921.

Exhibits of charts and graphic material was prepared for use at the Farmers' Convention, the State Fair, and at community and county fairs.

FARM FORESTRY

By keeping in touch with the local and national timber and lumber markets, information has been furnished that resulted in many sales of farm timber at profitable figures. Advice has been given to timber owners in the manufacture of more than 1,700,000 board feet of hardwood and pine lumber, while more than 625,000 board feet of lumber has been sold through the assistance of this office. Owners have also been assisted in marketing 2,253 railroad ties to main line railroads at a profit of not less than twenty cents a tie, due to direct marketing.

Treatment of fence posts was demonstrated at the Farmers' Short Course, the open tank method being used. A gasoline drum was fitted up for this demonstration, making an inexpensive outfit suited to use on the farm. The treated posts are to be set on the Experiment Station Farm at West Raleigh.

Plans have been completed for artificial planting near Wendell, N. C., where the owner of a treeless tract desires to establish longleaf pine. Seed has been obtained and the work will be carried through from nursery, transplant beds to final placing of seedlings in the area to be reforested.

Examinations have been made of farm timber tracts and methods of management, protection and marketing upon requests of owners, and farm operators have been assisted in controlling underbrush on new lands through treatment of cut stumps with compounds.

The supervision of four farm timber operations was continued, and 38 small plants visited during the year, where instruction was given in production methods, logging, and purchase of machinery.

FARM ENGINEERING

More time has been given to running water systems for farm homes during the year than to any other project, the demand for this line of work being the greatest, though much interest has been shown in lights and other home conveniences. With water supply work 164 propositions were looked over, giving plans with bills of material and estimates of cost, and 21 demonstrations

held. Home convenience campaigns were put on in three counties, with a total of 30 meetings and an estimated attendance of 1,890. A truck equipped with electrically operated home conveniences was used for giving demonstrations in these campaigns.

During the year 26 locations for hydro-electric power developments were looked over; 72 homes visited and advice given regarding electric lighting plants; 156 farmers personally advised as to farm machinery best suited for their conditions and where these could be obtained; and 226 blue prints for construction of different kinds of farm buildings were sent out.

The farm engineer attended seven club encampments and one boys' short course, where instructions were given in belt lacing, rope tying, hydraulic rams, making hog crates and brood coops, and in the use and operation of gas engines. The attendance of boys at these totaled 600.

PUBLICATIONS

Fifteen extension circulars were issued during the year, of which a total of 126,000 copies were printed. Individual requests for publications have averaged about 1,000 a month, some of these involving as many as 25 or 30 separate titles. Six poster bulletins were published, aggregating 18,000 copies, and an annual report of which 1,000 copies were printed.

During the year 1,478 circular letters and forms were duplicated for agents and divisions, and of these 406,224 copies were mailed to individuals or in bulk to agents.

REPORT OF DIVISIONS

The detailed reports of divisions and specialists showing the wide range of efforts made by the Agricultural Extension Service to improve agriculture and assist rural housewives, together with a financial statement, will be found on the following pages.

REPORT ON FARM DEMONSTRATION WORK

To the Director:—Herewith attached you will find our annual report on the year's work just closed.

This is the sixth annual report of the work under full coöperation of the United States Department of Agriculture with the State Department of Agriculture and the State Agricultural College, and the thirteenth annual report of the work since its beginning.

This report includes all the work done by white agents with white farmers, negro farmers, and white boys in clubs, and all the work of the negro agents with both negro adults and club boys. We believe a careful reading of this report, and especially the summary at its close, will reveal a vast amount of very important work accomplished during the year.

Satisfactory work was conducted this year in sixty-six counties, this being a reduction of twenty-three since the cessation of our late European trouble. This reduction, as you know, is due most largely to a withdrawal of emergency funds for war work, but also to some extent to the increased salaries which are being paid for more competent men that we are getting into the work.

The work, as heretofore, has been conducted under the three main divisions of crops, livestock and miscellaneous. The first includes such staple crops as corn, cotton, tobacco, small grains, winter and summer legumes, hay, forage, and pasture crops and orchards.

With livestock the work has been done with horses, beef and dairy cattle, hogs, sheep, and goats and poultry.

Under the head "miscellaneous" the work has been too general and too varied to even name all the classes of the work. It includes such things as work with fertilizers, manures, lime, seed selection, silos, dipping vats, drainage, terracing, farm buildings, heating, lighting, water and general better living conditions on the farm.

A large number of county agents have sent in detailed maps which show that their work has been well distributed over the county. This is advisable in order to reach all sections of a county so as to give all the people benefit of the service.

Organization Work

This year's work has been notable for much activity in the promotion of farmers' organizations. The main purpose of such organizations is to arouse farmers to the advantages of coöperation in their work and to conduct it by more business-like and profitable methods.

The secondary features of these organizations are important enough not to be ignored. They are educational, social, recreational, and entertainment features. Most of the organizations contain more or less of all of these features. They therefore, as a rule, serve the needs of rural people in a very broad and satisfactory way.

There are now 34 counties containing a central organization and 43 counties with one or more community organizations, and a total of 456 of the latter. This is an increase over those reported a year ago of 32, 27, and 127 respectively.

Cooperative Buying and Selling

A number of the organizations just named have been very useful and profitable in assisting farmers in buying at very reasonable prices, such things as they have to purchase, and in selling their surplus products at greater profits than is usually done.

By selling in large quantities in good markets, and by culling, grading, and offering their wares in more attractive forms, they usually obtain the highest market prices for them. The statistics further on show that farmers have profited in this manner this year to the extent of more than $173,000.

Corn Growing

On account of its importance as a staple crop, and its value in a "live-at-home" schedule, the matter of profitable corn production has been given due and successful attention, both as to corn growing demonstrations and in assistance given to farmers in corn growing generally.

During the year there have been conducted demonstrations to the number of 1,609 on a total of 10,968 acres, the average yield on these acres being 48 9/10 bushels per acre (white, 51.6; negro, 43). This is the highest yield made in the work. The average yield for the state, too, breaks all previous records with an estimated average yield of 22 bushels per acre.

The highest individual yield reported is that of 162 bushels per acre by Mr. William Parker, of Pasquotank County. The second is that of 115 bushels of Mr. T. R. Hodges, Beaufort County; next to that is the one of Mr. W. M. R. Church, of Wilkes County, of 106 bushels per acre. Other high yields are those of Messrs. W. S. Welborn, Wilkes County, 98.5 bushels; C. H. Lutterloah, Chatham County, 98.4 bushels; B. S. Staton, Anson County, 90 bushels; T. J. Marsh, Anson County, 90 bushels; W. S. Barber, Martin County, 90 bushels; D. L. Splawn, Polk County, 80 bushels. The average yield of the 25 highest reported is 81 bushels per acre.

Among creditable and commendable yields by negroes may be mentioned those of L. M. Miner, of Wake County, of 85 bushels; Timothy White, of Gates, 72 bushels; and J. D. Mask, of Anson, 75 bushels per acre.

In addition to good methods of preparation of soil the turning under of humus, and proper cultivation, the selection and improvement of corn have been given proper attention.

Cotton, Tobacco, and Peanuts

Good work has been done with the growing of these crops, as is shown by the amount of each produced. The temporary low prices which they are bringing at this time can, we believe, be largely avoided when the organizations now being promoted are properly functioning. This is a matter of slow education in teaching farmers how to work coöperatively. One of the ways which is being used for the more profitable production of farm crops is that of cheap cost of production.

Small Grains

Farmers as a whole hardly realize the importance of these crops. The time of planting comes during the busy season; there is danger of winter killing in the case of some of them, and harvesting usually comes when there is much other work to be done. These things make it difficult to get farmers to give sufficient attention to some grain crops. Much progress, however, has been made with this matter, as shown by the statistics further on.

Hay, Forage, or Cover Crops

The summary shows splendid results in growing these crops. This is true especially for the eastern counties. It is being demonstrated that the Coastal Plains can produce large yields of such crops economically, thereby reducing the necessity of purchasing large amounts from elsewhere. Both tame and wild grasses grow well when given proper attention.

The following mixture of grass seeds is being largely used in the eastern counties and gives splendid results, both for hay and for grazing:

Orchard grass, 8 pounds.
Italian grass, 8 pounds.
Red top grass, 8 pounds.
Alsike clover, 8 pounds.
White clover, 4 pounds.

In the higher and stiffer sections, 4 pounds of Red Clover seed is often substituted for the Alsike Clover. Japan Clover (Lespedeza) is used in various combinations. Vetch and oats together are also proving valuable.

Summer and Winter Legumes

Due attention has been given these crops, both for animal feeding and for soil enriching. In the matter of summer legumes, soybeans are proving to be exceptionally valuable. To a large extent they are displacing cowpeas on account of their better adaptability to the adverse conditions of soil and moisture, their easier handling and better resistance to decay, and ravages of insects and diseases.

Reliable analyses show that soybeans contain from thirty-five to forty-five per cent protein and from eighteen to twenty per cent oil, while cowpeas show twenty to twenty-five per cent of protein and one to two per cent oil. Velvet beans contain twenty-five per cent protein and five to seven per cent of oil.

Although a summer growing crop, velvet beans furnish an abundance of rich pasturage for hogs and cattle during the late fall and winter. For soil improvement they seem to have no superior under our conditions, furnishing as they do very large amounts of organic matter and nitrogen. The area planted to these two crops is being rapidly increased.

The work with alfalfa growing is confined largely to the western half of the state, although some splendid demonstrations have been grown in the Coastal Plains. Twenty-five agents conducted 284 demonstrations on 600 acres, producing an average of $3\frac{3}{10}$ tons of hay per acre. It is equally valuable for grazing purposes.

Sweet Potatoes

Through the work done in eradicating the diseases of this crop and establishing of potato curing and storage houses the area planted to this crop has been increased considerably in a number of the eastern counties and in a few of the western counties.

This results not only in farmers having more and better potatoes for home consumption, but by growing disease-free potatoes and by grading and keeping them in good condition until spring, much better prices are obtained for their surplus. Potatoes that would not sell for more than from forty to sixty cents per bushel at harvest time, often sell for one dollar or more per bushel when kept over winter.

Irish Potatoes

Some splendid work has been done with this crop by way of getting disease-free potatoes and in better methods of fertilizering, cultivating, etc. Farmers have been assisted to advantage in marketing this crop.

Orchard Work

The work of pruning and spraying and better care of orchards has been continued. On account of the difficulty of procuring suitable nursery stock in sufficient quantities of desirable varieties and at attractive prices, due to not

having fully recovered from war conditions, the work of establishing new orchards has been largely discontinued for the present. When conditions are more favorable this matter shall again be given due attention.

Livestock

Livestock work on the whole has progressed satisfactorily. The main things given attention in this work have been those of more and better pastures, better feeding and care and the use of purebred sires. The good resulting from the proper application of these things are applicable to native or scrub stock as well as to improved types.

In several counties farmers have been assisted to much advantage in marketing such surplus stock as they had to dispose of. This is especially true of hogs.

In the matter of eradicating diseases and insect pests, a number of dipping vats have been built and other methods successfully used.

Poultry work is demanding increased attention. In several counties it has grown to such an extent that it has become an important industry.

It is attractive to club members especially because of the comparatively small amount of capital required to start business with and the quick and remunerative returns. The profits from poultry have helped a number of farmers this season to hold their cotton for higher prices.

Manures, Fertilizers, and Lime

With fertilizers the main work has been to get the right formula for different crops and different soil types under varying conditions and the most profitable amount to use per acre.

Fortunately the tests made on our several branch test farms in different sections of the state are available in the solution of these matters. By studying the bulletins issued from these farms and by direct field studies of conditions, agents are able, as a rule, to be of much service to farmers in this respect. For this reason large numbers of farmers are buying fertilizer ingredients and mixing them at home to obtain just the formula wanted and also to get their fertilizers more cheaply.

Farmers are urged to take better care of their home produced manures and to properly supplement them with phosphates to obtain a better balanced plant food.

A large proportion of farm lands are found to be more or less acid and for probably other reasons also the use of lime is found to be very profitable. Reports show that the use of lime is increasing very rapidly.

Farm and Farmstead Improvements

The work accomplished under this head has been very extensive, varied, and valuable. It covers a score or more of different kinds of improvements made on the farm and in the home through and by advice and suggestions of extension workers. Rapid progress is being made in better equipped farms, more home conveniences and better sanitary conditions.

The matter is too large to go into in detail here, but attention is called to the summary which is indicative of the success of earnest efforts to make rural life more comfortable and satisfactory.

Miscellaneous

This heading includes mainly the number of visits made, miles traveled, meetings held, letters written, etc. The county reports are not complete in many instances, but the summary shows that extension workers have been very busy during the year and that they have in various ways reached an exceedingly large number of people.

If each visit made is counted as influencing one person, each call upon the worker one person, each letter and bulletin mailed one person, each article written ten persons, there would be a total of 677,957 reached. Add to this 360,860 reached in meetings and we have a total of 1,038,817. There should be added also the number of boys and girls reached through club work. This will probably bring the total up to 1,050,000 people.

But this does not represent the full influence of the work, for much of it is not reported, and one person influences others, and they still others, etc., until in many counties the entire rural population seems to have procured the benefit of the work.

Negro Demonstration Work

(Conducted by white agents)

There is now a total of fifteen negro agents at work in a number of the more thickly populated negro communities, so that white agents, to some extent, have been relieved of the necessity of direct service to negroes in such communities.

Outside of these communities a number of white agents render valuable assistance to negro farmers. This is done largely through meetings, both of white and of colored farmers, and often in mixed audiences.

As a rule negro farmers respond more readily to advice and suggestions than do white farmers, and are more careful to carry out instructions. They also observe well the coöperative work done among white farmers and benefit by it.

Negro Demonstration Work

(Conducted by negro agents)

The thirteen local agents in the work cover the whole of seven counties and parts of fourteen other counties. They have the immediate personal supervision of a competent negro district agent under the state agent. One negro state club agent conducts club work, both in coöperation with the local (negro) agents and also in outside territory as well.

In a general way the work is progressing satisfactorily. Negro agents are interested in the welfare of their people and seek to carry to them, in a practical way, the best there is in modern farming and home making. Negroes themselves, as a rule, are anxious for such help and readily contribute of their own means to support it. This is shown by the fact that there are eight counties in which negroes have raised funds to procure an agent, such agent not being available on account of a lack of Smith-Lever funds for paying the balance of the cost of the work.

Through the influence of the work negroes are making rapid progress in better farming. This enables them to buy homes and farms, which they are doing as fast as they can.

As a direct result of a home ownership campaign put on in one county by a local agent, 39 negro farmers bought farms and 97 bought lots on which to build homes. Eighty of these have succeeded during the year in building them comfortable dwellings. Home ownership is one of the strongest factors in promoting good citizenship among them.

Club Work

Boys' club work embraces both white and negro boys. The former is conducted by county agents with the assistant state agent as club agent. The negro club work is under the immediate supervision of a negro assistant club agent. Much good work has been done in both divisions, as shown by the following reports of the assistant state agent and of the negro club agent.

Respectfully submitted,

C. R. HUDSON, *State Agent.*

SUMMARIES OF FARM DEMONSTRATION WORK, 1920

County Organizations

Number of central county organizations supporting the work, 34.
Number of community farmers' clubs assisted in organizing this year, 143.
Total membership, 7,825.
Number of community farmers' clubs in the state, 665.
Total membership, 17,561.
Number of local lodges of Granges, Farmers' Unions, etc., supporting the work, 768.
Total membership, 9,142.
Number of community farmers' clubs ceasing to exist during the year, 16.
Number of these clubs organized so as to include the farmers' wife, children, and others, in their membership, 249.
Number of community farmers' clubs dependent on the county agent for their existence, 38.
Number of clubs with a community plan or program of work, 26.

Summary of Organizations

Organized this year	143	Membership	7,825
Previously organized	1,433	Membership	26,703
Total	1,576		34,528

Cooperative Buying and Selling Organizations

Numbers of farmers' organizations that buy and sell coöperatively, 267.

		Amount Saved.
Amount bought	$382,509	$ 89,784
Amount sold	448,117	83,847
Total handled (bought and sold)	$830,626	$173,631

Number of agents that keep a bulletin board, 9.
Number of agents using the market news service of the United States Department of Agriculture or the state news service, 12.

Summary of Crop Demonstrations

Number of demonstrators, 10,421.
Number of demonstrators reporting, 8,131.
Number of acres in demonstration, 52,055.
Number planting pure or selected seed, 2,882.
Number of acres of pure or selected seed, 27,929.
Number farmers selecting seed for next year, 5,990; bushels, 12,849.

Orchards

Number of demonstration home orchards: Apple, 565; peach, 779; other, 302.
Total number of trees in these demonstrations, 40,693.
Orchards inspected, 211; number trees, 159,056.
Orchards pruned due to agent's influence, 2,542; number trees, 153,681.
Orchards sprayed due to agent's influence, 961; number trees, 87,819.
Peach orchards treated for borers due to agent's influence, 1,024; number of trees, 46,267.
Orchards planted due to agents influence, 209; number trees, 24,077.
Total number orchards, 4,947; total number trees, 470,900.
Number of commercial orchards in demonstration territory: Apple, 174; number trees, 131,150. Peach, 203; number trees, 85,950.
Number of commercial orchards assisted in caring for, 139.
Number of trees actually treated by agents: Sprayed, 21,118; pruned, 33,088; wormed, 5,755. Total, 59,961.

	Number Demonstrators	Number Demonstrators Reporting	Acreage in Demonstration	Average Acre Yield		Estimated Average Yield Per Acre		Increased Yield from Demonstrations	Profits Resulting from Increased Yield	Number Farmers Testing Seed	Number Farmers Planting Selected Seed	Acreage Planted with Selected Seed	Number Farmers to Use Selected Seed Next Year	Number Who Fall-plowed	Number Used Cover Crops	Number Farmers Influenced to Adopt Rotation System	Number Farmers Influenced to Use Better Methods this Year		Estimated Per Cent Farmers Following Demonstration Methods	Number Acres treated for Disease or Insect Pests	Estimated Increased Acreage due to County Agents
						State	County										Directly	Indirectly			
Corn**	1609	983	10,968	*48.9 Bu.		22 Bu.	------	26.9 Bu.	$134,284	139	953	5,300	‡3,647	921	628	-----	8,021	15,835	‡‡20%	507	-----
Cotton††	1064	474	9,637	1,443 Lbs.		755 Lbs.	---- ---	688 Lbs.	103,850	†200	936	13,705	974	149	222	-----	3,965	7,002	31%	671	-----
Tobacco	355	205	1,357	921 Lbs.		---- ---	711 Lbs.	220 Lbs.	26,368	7	953	2,394	1,353	560	409	452	4,407	----	----	447	-----
Tomatoes	77	39	44	292 Bu.		231 Bu.	---- ---	61 Bu.	5,400	----	40	23	16	22	16	153	672	548	-----	145	-----
Irish potatoes	253	142	321	129 Bu.		80 Bu.	------	---- ---	6,025	-----	-----	232	-----	-----	-----	-----	1,748	2,641	-----	3,751	1,790
Sweet potatoes	275	181	640	170 Bu.		180 Bu.	------	---- ---	5,037	---- ---	---- ---	273	-----	-----	-----	-----	1,100	2,044	-----	167	1,819

*White, 51.6 bu.; negro, 43 bu. †Tested 206 bu. ‡Estimated amount seed selected, 12,849 bu.

**Number acres harvested for silage, 659; yield per acre, 7 tons; Number acres "hogged down" 213; value per acre when utilized this way, $54.

††Number coöperators, 3,314; acreage, 8,533; yield seed cotton per acre, 1,093 pounds. ‡‡This represents approximately 33,082.

	Number Demonstrators	Number Reporting	Acreage in Demonstration	Average Yield Per Acre	Estimated Average Yield Per Acre: State	Estimated Average Yield Per Acre: County	Increased Yield Per Acre	Profit Resulting from Increased Yield	Number Farmers Testing Seed	Bushels Tested	Acreage Planted With Selected Seed	Number Acres Cut for Hay	Number Acres Threshed for Grain	Number Acres Grazed Off	Estimated Value Per Acre	Number Acres Treated for Disease or Insect Pests	Number Bushels Treated for Disease	Number Farmers Induced to Plant Crop First Time	Number Farmers Influenced to Use Better Methods This Year: Directly	Number Farmers Influenced to Use Better Methods This Year: Indirectly	No. Farmers Ord. Inocul. Material Through Agents	Estimated Acres Sown This Fall	Number Acres Turned Under for Soil Improve Through Agents' Influence	Estimated Number Acres in State	Number cooperators	Acreage	Yield Per Acre
Oats	509	333	2660	*34	----	*18	*16	$6,604	16	110	517	977	---	952	$37.00	85	1270	201	1265	---	---	---	---	---	276	1456	*34
Wheat	624	458	3046	*21	*12	----	*9	17,158	45	185	1537	**21	3016	---	---	12	1903	36	2976	4086	---	---	---	---	---	---	---	---
Rye	723	250	2303	----	----	----	----	----	10	17	----	----	----	671	18.00	20	250	984	1271	1326	---	---	1461	---	---	---	---	---
Alfalfa	295	169	613	†3.3	†2.2	----	†1.10	1,320	---	---	---	468	---	56	26.50	444	---	---	211	175	191	326	---	---	---	---	---	---
Red clover	784	391	2280	†2.5	†1.6	----	†.9	19,685	---	---	---	2931	---	613	22.00	480	---	---	---	3292	338	1947	349	12,716	---	---	---	---
Crimson clover	428	325	2120	†2	†1.5	----	†½	574	---	---	---	496	---	125	18.00	1016	---	---	2170	2282	300	3019	---	5895	---	---	---	---
Burr clover	30	5	10	†2	†15	----	----	---	---	---	---	---	---	7	20.00	8	---	---	4	33	---	9	5	40	---	---	---	---
Vetch	67	31	295	†2	†1.5	----	----	---	---	---	---	86	---	49	12.50	120	---	---	100	46	115	247	50	50	---	---	---	---
Mixed crop	1168	778	5135	†2	†1.5	----	----	34,484	---	---	---	1105	---	1170	15.00	99	---	---	1553	1872	253	7952	2366	3308	---	---	---	---
Japan clover	153	100	990	†1	----	----	----	---	---	---	---	---	---	3183	18.00	335	---	---	168	90	202	412	377	594	---	---	---	---
Soybean hay	18	12	106	†27	†2	----	----	---	---	---	---	52	---	49	35.00	---	---	---	108	530	---	375	---	---	---	---	---	---
Soybeans	1108	613	4010	*36	----	*23	----	13,285	85	137	1967	1967	1934	6548	41.00	3068	---	---	---	4222	---	---	5970	15245	---	---	---	---
Peanuts	107	79	386	†1	*38	†1.5	----	---	---	---	429	530	460	64	70.00	181	---	---	144	70	---	---	---	---	---	---	---	---
Cowpeas	487	201	1948	*11	*7	----	*4	8,928	75	---	228	5200	662	2547	28.50	184	---	---	1559	1711	---	---	569	29727	3778	13368	*10	†2
Velvet beans	287	145	2186	----	†3	†1.5	†1.5	---	---	---	387	39	10	897	65.00	138	---	---	669	307	---	---	1240	3648	---	---	---	---

*Bushels seed. †Tons hay. ‡Average yield of hay per acre, 3 tons; increase over ordinary methods, 1 ton.
**Average yield of hay per acre, 2 tons.

	Number Demonstrations in Feeding	Number Animals in Demonstration	Number Fed and Cared for Account to Methods Advocated	Number Assisted Farmers in Selling: Individual	Number Assisted Farmers in Selling: Group	Number Demonstration Records Kept	Reduced Cost Per Pound	Number Associations or Clubs	Number Members	Number Herds Started	Average Increase Over Ordinary Methods Per Head	Number Farmers to Start Grazing Crops	Number Pure-bred Bred Due to Agents' Influence	Number Feeding Animals Brought in Territory Due to Agents' Influence		Number Brought in Territory Due to Agents' Influence	Number in Territory	Number Grade Animals Brought in
Horses and mules	30	68	380												Mares	73		
															Stallions	1	96	
															Jacks	1	58	
Dairy cattle**	††22	166		174	81		$0.03	3							Bulls	91	837	
															Cows or heifers	420	6,198	288
Beef cattle	78	255	*705 †3,010	93	28	6	.04	2	54	35				280	Bulls	69	429	
															Cows or heifers	137	1,665	125
Hogs‡	267	1,365	24,306	925	165	576				521	72 Lbs.	2,886	1,480			354	‡‡4,694 440,469	
Sheep	43	175	2,449			2					30 Lbs.	157			Rams	56	302	
															Ewes	36	865	291
Sheep and goats					120					75								

*Wholly. †Partially. ‡Number self-feeders built at suggestion of county agents, 77.

**Number cows tested for profitable milk production, 373; number agents owning Babcock tester, 12; number farmers induced to feed better balanced ration to stock, 1,266; number head of stock so fed, 2,823; number new cream routes established this year through influence of county agents' work, 5.

††Demonstration in dairy work. ‡‡Boars.

Poultry

Number of poultry demonstrations, 475.
Number of each kind of poultry grown and cared for according to methods advocated: Chickens, 73,036; Guineas, 650; Turkeys, 565; Geese, 260. Total, 74,511.
Number of farms on which poultry management has been improved as a result of demonstration work, 5,990.
Number of birds on these farms, 103,671.
Number of communities raising the same kind of poultry, 45.
Number of cream routes collecting poultry products, 45.

Summary of Animal Demonstrations

Number of purebred animals brought in, 1,871.
Number of demonstrations conducted, 915.
Number of animals in the demonstrations, 2,029.

Dipping Vats

Number of dipping vats built through agent's influence this year, 21.
Number of agents helped to construct, 9.
Number of agents helped to fill with the solution, 35.
Number of solutions tested, 26.
Total number built in state by all forces during the year, 95.
Total number in the state at this time, 250.
Estimated total number of cattle dipped during the year, 38,490.

Livestock Diseases and Pests

Number of head treated:
Cattle—Blackleg, 3,386; anthrax or charbon, 105; digestive and other troubles, 667; tuberculosis, 2,857; ticks, 13,996; lice, 1,983.
Hogs—Cholera (single treatment), 8,378; cholera (simultaneous treatment), 4,539; digestive and other troubles, 4,539; worms, 9,111; lice, 27,478; mange, 9,862.
Sheep—Stomach worms, 1,251; digestive and other troubles, 162; grubs, 490; ticks, 500.
Horses—Digestive ailments, 59; distemper, 34; accidents, 73; other troubles, 105.
Personally treated or tested by agents:
Cattle—Blackleg, 1,869; anthrax or charbon, 3; tuberculosis, 2.
Number of agents with instruments for such treatments, 38.

Fertilizer

Number of farmers advised regarding the proper use of fertilizer, 26,373.
Number of fertilizer demonstrations farmers are conducting, 2,844.
Acreage in these demonstrations, 42,881.
Amount fertilizer used on such demonstrations (tons), 2,264.
Number of communities influenced to buy fertilizers coöperatively, 200.
Quantity bought coöperatively (tons), 10,089.
Value of fertilizer bought coöperatively (actual price paid by coöperative purchaser), $263,763.
Total amount saved by coöperative purchases, $59,045.
Number of farmers home-mixing fertilizer by agents' advice, 3,209.
Estimated saving per ton to farmers, $5.90.
Number of farmers who top-dressed crops with fertilizer at agents' suggestion, 11,186.

Manure

Number of farmers induced to take better care of farm manure, 6,615.
Number providing manure sheds at agents' suggestion, 549.
Number composting farm manure and waste products, 4,546.
Number manure spreaders in demonstration territory now, 1,530.
Number agents helped to place this year, 158.
Number of farmers using phosphate or other material for reënforcing farm manure, 6,503.
Estimated quantity of farm manure now being saved in demonstration territory, 1,149,235.

Silos

Number of silos built this year, 40.
Number of silos built this year as a result of agents' advice, 26.
Number of silos in state now, 566.
Of this number of silos there are: Tile, 17; cement, 113; stave, 310; stone, 12; other, 114. Total, 566.

Lime

Number of demonstrators, 1,515.
Number of demonstrators reporting, 784.
Total number of acres in lime demonstrations, 7,361.
Profit resulting from increased yield on all lime demonstrations, $34,557.
Total number of acres treated this year, 18,173.
Number of local sources of lime developed, 490.
Number of lime crushers installed as a result of demonstration work, 1.
Number of lime kilns built as a result of demonstration work, 4.
Number of lime sheds constructed as a result of demonstration work, 422.
Number of carloads shipped into demonstration territory, 1,617.
Number of farms on which soil was tested for acidity, 1,217.

Summary of Miscellaneous Demonstrations

Number of fertilizer demonstrations, 2,844; acres, 42,881.
Number of lime demonstrations, 1,515; acres, 7,361.
Number of crop demonstrations, 10,421; acres, 52,055.
Number of animal demonstrations, 915; animals, 2,029.
Full total demonstrations, 15,695; acres, 102,297.

Farm and Farmstead Improvements

(Things done with agents' assistance and advice)

Number of buildings erected: Dwellings, 444; other, 500.
Number of farm buildings improved: Dwellings, 1,051; other, 412.
Number of new building plans furnished: Dwellings, 163; other, 134.
Number of farm buildings painted or whitewashed: Dwellings, 906; other, 374.
Number of home water systems installed or improved this year, 337.
Total number of such systems now, 1,778.
Number of home lighting systems installed this year, 1,316.
Total number of such systems now, 4,097.
Number of home grounds improved, 932.
Number of farm and home sanitary conditions improved, 1,663.
Number of homes screened against flies and mosquitoes, 4,381.
Number of sanitary privies erected, 2,435.
Number of telephone systems installed, 189.
Number of farmers furnished plans and induced to adopt systematic crop rotations, 4,484.

Total acreage of such rotations, 99,250.
Number of new pastures established, 1,263.
Number of acres, 7,070.
Number of old pastures renovated, 491.
Number of acres, 3,549.
Number of drainage systems established in state, 90.
Number of farmers induced to drain all or parts of their farms, 794.
Number of such acres drained by tile, 5,265; by ditch, 13,143.
Number of farmers induced to remove stumps, 301; acreage, 1,472.
Number of farmers induced to terrace their sloping lands, 1,394; acreage, 18,060.
Number of home gardens planted or improved, 6,518.
Number of farmers induced to save surplus farm products for winter use, 7,544.
Number of road improving demonstrations assisted in, 46.
Number of miles of improved roads resulting therefrom, 906.
Number of farmers who planted cover crops to be turned under, 16,068.
Number of new implements and tools bought: Binders, 37; hay presses, 34; gas engines, 257; 2-horse cultivators, 356; tractors, 344; motor trucks, 309; corn planters, 699; mowers, 309; grain drills, 134; disk harrows, 466; 1-horse cultivators, 621; plows, 1,635; hay loaders, 16; hay rakes, 209; ensilage cutters, 49; cream separators, 12; spraying machines, 280; manure spreaders, 130; small tools, 9,100. Total, 19,526.

Miscellaneous Work

Number of visits by agent to: Demonstrators, 24,135; coöperators, 11,944; other farmers, 20,214; business men, 5,822; boys' and girls' club members, 8,069. Total visits, 70,057.
Number of miles traveled: Railroad, 73,343; team, 15,698; automobile, 374,775; otherwise, 15,943. Total miles traveled, 479,759.
Calls on agent relative to work at office or home: Personal, 59,243; telephone, 15,122.
Number of farmers' meetings held under auspices of agents or Extension Division, 3,267.
Number of meetings of all kinds addressed by agents, 7,020.
Total attendance at these meetings (approximate), 334,566.
Number of field meetings held by agents, 1,171.
Total attendance at these meetings, 23,699.
Per cent of time spent at office work, 20: Correspondence, 43; conference, 32; miscellaneous, 25.
Per cent of time spent in field work, 80: Supervision regular demonstrations, 37; other farm visits, 34; at meetings, 14; assisted in short courses, 3; organization, 12.
Number of official letters written, 58,089.
Number of articles prepared for publication, 1,176.
Number of different circular letters prepared and sent out, 4,627.
Total number of copies of such letters, 105,150.
Number of bulletins or circulars of United States Department of Agriculture distributed, 145,131.
Number of bulletins or circulars from State College or State Department of Agriculture distributed, 173,505.
Number of visits to schools relating to work, 3,204.
Number of schools assisted in outlining an agricultural course, 210.
Number of Extension Schools or short courses assisted in, 35.
Total attendance at these schools, 2,595.

Total number of days engaged in these schools, 289.
Number of farmers who attended short courses at colleges as a result of agents' effort, 249.
Number of boys attending agricultural or other schools or colleges as a result of the club work, 303.
Number of times been visited by specialists from college or the Department, 910.
Number of county fairs held in demonstration territory, 59.
Number of demonstrators, coöperators, and club members exh'biting, 2,213.
Number of these won prizes, 1,297.
Number of demonstrations in truck or small fruit, 210.
Number of successful from a financial standpoint, 239.
Number of farm account books distributed to farmers, 1,556.
Number of farmers keeping cost records at agents' instance: Complete, 194; partial, 2,348. Total, 2,599.
Number of farmers practicing fall plowing, 16,481.
Number of farmers selecting seed, 13,557.
Number of farmers growing any kind of improved seed for sale, 1,333.
Number of wood lots improved, 241.
Number of farmers influenced to grow sugar cane or sorghum for syrup, 3,671.
Number of farmers keeping bees at agents' suggestion, 308.

Special Report by White Agents on Work With Negro Farmers

Number of negro demonstrators (all crops), 56.
Number of negro demonstrators reporting (all crops), 43.
Total acreage of all crops grown under improved methods on negro demonstration farms, 272.
Number of negro coöperators (all crops), 123.
Total acreage of all crops of negro coöperators, 1,814.
Number of negro farmers who planted pure or selected seed on their demonstrations, 36.
Number of negro farmers influenced to select seed for next year's crop, 194.
Estimated quantity of all seed selected (bushels), 369.
Number of negro farmers who fall-plowed their demonstration acres, 24.
Approximate number of negro farmers in demonstration territory following demonstration methods on their farms, 871.
Number of pureblood animals bought by negro farmers: Dairy cattle, 10; hogs, 83; poultry, 34.
Number of negro farmers producing practically all their home food and feed, due to agents' influence, 441.
Number of negro agricultural clubs or community organizations formed this year for the general improvement of rural conditions, 10.
Number of members, 243.
Farm and rural improvements made, due to agents' influence: New houses built, 5; new barns built, 13; new schools built, 2; new churches built, 1; buildings improved or repaired, 32. Total, 53.

REPORT ON BOYS' CLUBS

Attached herewith is a general report of boys' club work for 1920, which includes the report from the county agents and from Allen G. Oliver, W. W. Shay, and George Evans, poultry, swine, and sheep specialists respectively. S. J. Kirby, plant club specialist, resigned in February, to take up county agent work, and no one has been appointed to fill this position.

The work has been conducted as a county agent project as heretofore. The county agent has supervision of the work in the county. This office and the specialists have rendered such assistance as requested, and have promoted

the best interest of the work. Generally where club work has succeeded it has been due to the agents' efforts, but unsuccessful work is not always due to lack of interest on the part of the agent. Urgent attention to other important problems, or the lack of a definite plan of work has, in many instances, kept the county agent from starting club work or led to neglect after starting it.

A County Plan

Early in the year the following plan for club work was sent each agent urging him to embody it in his plan of work:

SUGGESTED COUNTY PLAN OF WORK FOR BOYS' AND GIRLS' CLUBS

SCOPE

1. (a) A minimum of six communities should be organized with a total minimum membership of seventy-five.

PROJECTS

2. (a) As few lines of work or projects as possible should be used.
   (b) Five or more members in a club should be engaged in the same project.

ORGANIZATION

3. (a) Each community should be organized into a club with the following officers: President, vice president, secretary-treasurer, and local leader.
   (b) The local leader should be an adult especially interested in boys and girls and willing to devote some time in assisting the agent in directing club work in the community.
   (c) Local leaders should be instructed through personal calls, letters, bulletins, and special meetings.
   (d) Each club, when organized, should be reported immediately to the state office.
   (e) Literature for members should be sent to the local leader for distribution.

MEETINGS

4. (a) A minimum of one meeting a month should be held.
   (b) Meetings should be both educational and social.
   (c) Each member should report from his record book work accomplished from one meeting to another. (This will encourage the keeping of records.)
   (d) At least one letter or bulletin or both should be furnished each member monthly.
   (e) The important phases of each project should be demonstrated by the agent, specialist, or local leader.
5. There should be one county club encampment.
6. All members should show their club products at the county fair.
7. Each club should send at least one representative to the State Short Course.
8. Where possible a car of club exhibits should be sent to the State Fair.
9. All records should be in the county agent's office not later than November 15.
10. Funds should be provided to award the club emblem to each member completing the work in a creditable way.

Such a plan should make it possible for some club work to be successfully done in most any county without encroaching too heavily on the agent's time. Practically all agents did include club work in their plan of work, but for some reason only forty-three started the work and *seven* of these failed to report results.

The Enrollment

Heretofore the enrollment has been secured in the spring, which seems too late to organize properly for the best supervision and results. To see if this difficulty could be overcome the enrollment in Swain, Graham, Jackson, Avery, and Buncombe counties was made in November and December. The results indicate that this is the proper time to organize the work.

The total enrollment is considerably smaller than the 1919 enrollment. The cause I am unable to explain further than to say that so many phases of the work have been started until it is physically impossible for the agent to give very much attention to any one of them. Realizing this, much attention has been given to organizing the work into community clubs. There are 121 organized clubs with 25 counties having one or more clubs.

Projects

The projects vary somewhat with the different sections of the state and with the agents' plan of work. Members have been enrolled in the following clubs or projects this year: Poultry, pig, sheep, calf, corn, cotton, potato, soybean, and tobacco.

The object is to use the boys and girls to aid in developing the agriculture of the state and to use agriculture to enrich the life of boys and girls of the farm.

The aim in conducting these projects is to demonstrate the value of grazing crops, balanced rations, good care and purebred animals in growing livestock; and proper fertilization, soil preparation, cultivation, and seed selection in growing crops.

Method of Instruction

Bulletins, circulars, letters, meetings, personal visits and demonstrations are all used in instructing club members. More group meetings were held this year than heretofore. This was made possible through the organized clubs. A still greater use of group meetings will increase the efficiency and enlarge the results of the work.

All literature pertaining to the projects has been prepared under the supervision of the subject-matter heads, as has been the rule in the past. We did not have, however, suitable literature for club projects. We especially need manuals on pig, sheep, corn, potato, and cotton projects. We need literature simply and plainly written and well illustrated for club work.

The Tar Heel Club News

In May we began to issue the *Tar Heel Club News*. A four page sheet devoted entirely to the activities of club work. This paper is to largely take the place of circular letters of instruction and announcements. It also carries stories of achievement, extracts of club work from other states, and items to stimulate interest in club work.

Encampments

Twenty-one county encampments were held during the summer months in the following counties:

Avery, Bladen, Buncombe, Cabarrus, Chowan, Columbus, Durham, Jackson, Johnston, Madison, New Hanover, Onslow, Perquimans, Robeson, Rutherford, Sampson, Stanly, Swain, Transylvania, and Union.

The objects of the camps are to provide an enjoyable and instructive vacation in reach of every club member. The camp was held within the county at some convenient place, where, if possible, buildings, plenty of good water, play

grounds, and a swimming hole was convenient. Where houses could not be secured, tents were used. The director provided ten tents which were loaned to the counties for helping out in such cases.

The length of these camps was from two to three days. Each member brought a definite amount of food, a blanket, and a pair of overalls or a work dress, and other personal necessities to last through the camp. A definite program was arranged and carried out by the county agents, which consisted of work in the morning, recreation in the afternoon, and social and inspirational features at night. These camps were very much worth while and should be continued.

State Club Short Course

Our State Short Course was almost a failure from the point of attendance. On the other hand those who did attend received some very valuable instruction of a practical nature.

There were several things to cause the poor attendance. First the announcement of the date of the short course was not made in time; second, the agents were urged to get farmers to the Farmers' Convention, which came prior to the Boys' Short Course, making it impossible for the agent to round up the boys; third, the shortage of labor on the farm prevented many from attending and the fact that those under fourteen were debarred from attending kept the attendance from running up as in previous years.

A very practical course in rope work, belt lacing, gas engine operation, farm levels and stock judging was given. Some very good work in leadership was done also at the general meetings. State officers were elected and committees of boys were appointed to take an active part in the meeting next year.

International Club Judging Contest

Upon the part of the Washington office and C. A. Cobb, editor of *Southern Ruralist*, a very attractive club judging contest was inaugurated in connection with the Southeastern Fair in Atlanta. This contest is open to all states doing club work and the winning team gets a free trip to Royal Livestock Show, London, England.

A team of four boys was selected at the Hickory Fair in a competitive contest to compete in the contest at Atlanta. After the team was selected they were given special coaching by members of the livestock division of the extension service.

Fourteen states entered the contest. North Carolina won twelfth place and Texas first.

This is considered the best club judging contest ever staged. It has great possibilities in arousing greater interest in livestock among club boys and girls generally. We regret that only four county agents took an active part in preparing boys for this contest, but we hope more interest will be shown another year.

A study of the tables below will show the results of club work for 1920, as reported by the county agents.

Statistical Report by Counties

County	Enrollment		Members Reporting	Value	Members Not Reporting	Value	Total Value
	Sent In	Reported					
Alamance	72			$		$	$
Alexander	128	50	29	943	25	660	1,603
Anson	124						
Avery	446	189					
Bladen	109	171	2	63	198	5,645	5,708
Buncombe	422	169	41	1,704			1,704
Cabarrus	16						
Catawba	108	45	20	5,275			5,275
Chatham	14	21	9	550	12	500	1,050
Chowan	39						
Columbus	51	50			50	1,680	1,680
Durham	94	50	24	2,000	28	980	2,980
Edgecombe	22				20	1,500	1,500
Forsyth		42					
Gaston	84	77	5	469	7	525	994
Graham	163	71	38	1,162	15	233	1,395
Jackson	287	64	16	1,240			1,240
Johnston	384	288	9	976	114	3,625	4,601
Lenoir	55	67					29,730
Lincoln		49	6	1,347	56	3,655	5,002
Madison	155	171	20	504	153	2.245	2,749
Martin		41	7	4,552	24	2,520	7,072
Montgomery		33			33	538	538
Nash		29			29	1,725	1,725
New Hanover	42	16			16	640	640
Onslow	18	40			40	743	743
Pasquotank	20	86	4	577	82	4,774	5,351
Perquimans	14	12			12	675	675
Person	13				12	2,000	2,000
Polk	14						
Rockingham		19			19	1,373	1,373
Rutherford	23	20			20		
Sampson	63	77			77	688	688
Stanly	31	27	23	800	4	107	907
Swain	225	192	69	1,564	114	1,305	2,864
Transylvania	82	45	10	368	25	3,141	3,509
Union	108						
Wake	95	76			76	2,300	2,300
Warren	101	23	1	65			65
Wayne	27				5	500	500
Wilkes	37				62	2,748	2,748
Wilson					33	3,209	3,209
Yancey	21	20	3	432	17	557	989
Yadkin		33			33	1,793	1,793

Results of Boys' Club Work—Crops

Project	Enrollment	Reports Received	Total Production	Average Yield Per Acre	Average Cost	Total Cost Production	Total Value	Total Profit	Total Value of Prizes
Irish potatoes	*(7)	(5)	(5)	(5)	(5)	(5)	(5)		
	99	24	849	206	$ 0.42	$ 251	$ 818	$ 516	$ 653
Sweet potatoes	(2)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	
	6	2	80	320	.40	32	160	132	
Corn	(25)	(14)	(14)	(14)	(14)	(14)	(14)	(14)	†(4)
	404	83	7,262	64	.50	2,661	6,120	3,606	14
Cotton	(6)	(2)	(2)	(2)		(2)	(2)	(2)	
	6	7	7,271	892	.20	494	836	342	
Totals	515	116	15,462	1,482	.38	3,438	2,434	4,596	14

Estimates

	Members	Production	Value
Corn	259	13,306	$ 19,252
Irish potatoes	18	380	530
Sweet potatoes	7	720	900
Peanuts	(4)	(2)	(3)
	31	865	1,155
Soybeans	(5)	(5) 35 bu.	(5)
	6	10½ tons hay	444
Cotton	(9)	(12)	(12)
	73	34,522	6,314
Tobacco	(2)	(2)	(2)
	28	68,000	2,650
Totals	422		25,245

Results of Boys' Club Work—Animals

Project	Number Enrolled	Reports Received	Total Number Animals	Total Final Weight	Average Cost, Pound	Total Cost	Total Value	Total Profit	Total Value of Prizes
Pigs—growing demonstration	(19)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(20)
	442	72	72	14,763	$ 0.10	$1,558	$3,321	$1,763	$ 1,042
Pigs—sow and litter	(9)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	
	99	4	31	3,090	.12	452	593	142	
Pigs—fattening demonstration			(2)	(2)	(2)	(2)	(2)	(2)	
	201	3	3	764	.10½	81	88	8	
Calf, dairy	5	1	1			72	200	128	
Sheep	20								
Poultry	(17)	(6)	(6)		(6)	(6)	(6)	(6)	
	822	108	2,237		.60	1,810	7,039	5,229	
Calf, beef	(3)	(1)	(1)	(1)	(1)		(1)		
	6	3	3	2,263	.01½		135		
Total	1,595	191	2,347	20,880	.19	3,973	11,376	7,269	1,042

*Counties reporting in parenthesis.
†100 bushels or over per acre.

Estimates

Project	Members	Production	Value
Pigs—growing demonstration	*(17)	(17)	
	361	46,098	$ 11,303
Pigs—sow and litter demonstration	(12)	(12)	(12)
	114	41,000	10,177
Pigs—fattening demonstration	105	20,177	3,355
Calf, beef	(3)	(2)	(2)
	8	3,860	249
Calf, dairy	(2)		(2)
	3		200
Poultry	363	11,875	4,681
Totals	934	123,010	29,586

Animal Projects

REPORT OF FIVE BEST COUNTY RECORDS

Project	Number Reporting	Number Animals	Original Value	Final Value	Cost of Gain	Profit	Value of Prizes
Poultry			(17)	(21)	(16)	(23)	
	33	575	$ 56	$ 1,456	$ 199	$ 4,544	$ 407
Pigs—growing demonstration	31	30	407	1,645	458	799	112
Pigs—sow and litter demonstration		(25)	(24)	(25)	(13)	(13)	(7)
	25	150	1,393	4,470	561	1,481	107
Beef calf			(3)	(5)			(4)
	5	5	100	188			48
Sheep		(5)	(5)	(5)			
	5	36	572	901			
Dairy calf	1	1	50	200	72	128	91
Totals	100	797	2,578	8,860	1,290	6,952	765

Plant Club Projects

Project	Number Bushels	Cost, Bushel	Net Profit	Value of Prizes
Corn	(31)	(26)	(25)	(18)
	2,204	$ 0.50	$ 1,203	$ 271
Cotton	(3)	(2)		
	1,700	.16		
Potatoes	(7)	(7)	(7)	(6)
	140	.56	156	20
Totals			1,389	291

William Parker, of Elizabeth City, R. 1, reported a yield of 162 bushels of corn per acre and J. H. Keaton of the same place reports 141 bushels per acre.

*Counties reporting in parenthesis.

Summaries

Agents visited, 114.
Meetings, 248.
Attendance, 20,204.
Club meetings at schools, 79.
Other meetings, 13.
Personal visits, 639.
Demonstrations, 428.
Miles traveled by rail, 23,343.
Miles traveled by automobile or team, 5,723.
Letters written, 2,685.
Circular letters, 31.
News articles, 55.
Poultry judging at school, 3.
Eggs exhibited, 137 dozen.
Birds exhibited, 1,176.
Club members exhibiting poultry, 275.
Cash prizes, $2,123.
Two silver cups, valued at $80.
Hen-houses constructed, 36.
Hen-houses remodeled, 22.
Counties enrolling club members, 43.
Counties reporting on club work, 33.
Organized clubs, 121.
County encampments, 20.
Total enrollment in plant clubs, 422.
Total enrollment in animal clubs, 1,595.
Total complete reports received, 307.
Total value plant products reported and received, $27,679.
Total value animal products reported and estimated, $40,962.
Total value plant and animal products reported and estimated, $68,641.
Total profit plant and animal products, $11,865.

NEGRO CLUB WORK

The fifth year of the negro boys' and girls' club work is marked with continued progress and intense interest. So much so that it is a physical impossibility for the club agent to meet the numerous demands for his services. The office work has been neglected in efforts to meet requirements in the field.

For several years the work has not been understood. The negro farmer had been the prey of so many fraudulent agencies that he was just a little reluctant to allow his children to take hold of any kind of project. It was too free. He naturally expected that there was something else behind it. And, too, about this time the World War broke out, and the false rumors circulated made it exceedingly difficult even to get the children's names, because they thought we were agents of the government, trying to find out how much food they had so that some one could return later and collect it for the use of the army and navy. They also thought that the government would take the corn, pigs, and poultry after they had been grown. But all this has been cleared away and the calls for the club agent comes from every corner of the state.

Such splendid results have been obtained from our club and lecture work that parents have put their children into the club just to get the scientific information sent to club members. The adults clamored so to join the clubs that we finally had to organize them. So we now have both children and adults organized separately and meet both clubs, when we visit a community. We also furnish the circular matter to each. The arrangement is ideal, because it is difficult to get the children to a meeting without the parents, but

both come in large numbers together. So we are now working through organized clubs only. Literature is mailed in bulk to the secretaries, who distribute it among the members.

County Club Round-up

The county club round-up, held during the summer, was a great success. They were really farm picnics, because each family brought baskets, melons, fruits, ice, lemons, and ice-cream. The children brought baseballs and bats. This appealed to both parents and children, and they came in great numbers. The meetings were held in large groves near a schoolhouse or church, convenient to water, shade and shelter in case of rain. We had from 300 to 800 people at these meetings, and it is interesting to note that on each occasion they decided to make this an annual affair on a much more elaborate scale.

Some Striking Effects of the Work

One boy, eight years old, borrowed $30 from a state loan fund, purchased two pigs and now has $160 worth of baby pigs, a sow worth $75 and a male worth at least $100. So this boy has about $235 worth of hogs, grown in 18 months, from $30 worth of pigs. A farmer near Mt. Olive has a son who is a former corn club member who made as much corn on six acres of the same land as he formerly made on twenty—60 barrels. He has turned the farm over to his son.

A questionnaire sent out to parents of club members reveals the following facts: One farmer says, "Ten former club members are farming, one in college. Another says that farm meetings and club work have improved his farm, home, and livestock. He is making 10 bushels more corn per acre, 6 bushels more wheat, 800 pounds more oat-hay, 500 pounds more pea-vine hay, and 150 pounds more cotton. Another farmer says, "Farm, home and livestock improved, 4 bushels more corn per acre, 400 pounds more cotton; will make 6 to 8 barrels of corn per acre this year and 1,200 pounds of seed cotton per acre."

Still another says: "Farm, home, and livestock improved, four children in the clubs. He knows of 20 club members who are farming, 4 who are teaching school, and he is making 5 bushels more corn per acre." One adult farm club member near Fayetteville, who had heretofore cultivated 12 acres in corn, making a total of 125 bushels, cut to 6 acres this year and made 275 bushels of corn. He followed our "Farm Plan for 1920."

Considerable interest was created by this farm plan and an article the club agent wrote called "When the Bottom Drops Out."

From a loan fund of generous white people, under the supervision of the state department we placed about 25 registered pigs among negro boys and girls. Through the generosity of the Hon. E. T. Meridith, Secretary of Agriculture, we have had placed at our disposal $2,000 to be loaned to negro boys and girls to purchase purebred pigs and poultry. A great many have already been placed as will be seen below, and applications for a great many more are coming in daily. This has proved to be a greater stimulus to the club work than prizes. We do not offer any prizes for negro club work. So many children will get discouraged over the failure to win a cheap prize and sacrifice the more fundamental and beneficial part of the work.

Agricultural Education

This argument for the past three years has been established so thoroughly that we never hear the word prize mentioned by either parents or children. The only prizes looked for are those won at county, community, and state fairs, where in each case the club member has been the more successful competitor. And we might say in this connection, that we attended a great many

negro fairs of the state in the capacity of a judge in coöperation with the state fair committee. We have also assisted in planning and organizing the North Carolina Negro Farmers' Congress, which meets semi-annually. The club agent serves as secretary for this organization. It has been a great stimulus to the extension work generally, because we have the service of experts from the State Department of Agriculture and agricultural colleges on these occasions. This makes it possible to procure the best service available. Much of the splendid work done by adult farmers referred to above may be attributed to the service of these experts.

We wish to acknowledge the assistance of, and express our appreciation for, the publicity given our work by the leading daily and weekly papers of the state. These agencies have rendered us far more valuable service than they realize. We would consider it an act of ingratitude to close without expressing our very great appreciation to the farm demonstration agents and negro rural supervisors. But for the assistance of these agencies the momentous results of 1920 would not have been possible. In our efforts to show our appreciation to the supervisors, the club agent suggested a plan which induced the Robeson County farmers and teachers to raise half of the money to purchase their supervisor a self-starter Ford. This money was presented to the county board of education by a committee of negro farmers, and they very readily appropriated the remainder and purchased the car. The county superintendent of Robeson County deserves a great deal of credit for the part he played in this affair. The club agent upon request of the district agent, who assisted him in the Robeson scheme, and who has stood shoulder to shoulder with him in all adult work outside of the local agents' territory, went to Columbus County and presented this same scheme and collected from the negro farmers and teachers there $152.50 in about 20 minutes. He has been invited back January 22, 1921, to see the remainder of the money raised. It might be well for us to state that the club agent does not try to do any adult work in the local agents' territory.

It is interesting to note that the influence of the boys' and girls' club work has caused 50 farmers to sow winter cover-crops, to purchase 88 purebred hogs, 75 purebred chickens, and a great many high grade cows. They have also built 16 new homes, remodeled 23, and have planned 27 new barns. It is further stated that 65 will pay cash for fertilizer in 1921, and that at least 25 will use lime.

Summary of Negro Work, Office and Travel

Visits to rural supervisors, 27.
Visits to club members, 198.
Visits to demonstrators, 17.
Visits to schools or clubs, 32.
Meetings, 116.
Attendance, 70,692.
Miles traveled by rail, 13,936.
Miles traveled by automobile, 716.
Miles traveled by team, 135.
Letters written, 2,360.
Circulars and cards distributed, 33,908.
Bulletins distributed, 6,029.
Buttons distributed, 75.

The local agents failed to report their total enrollments, therefore, the total number enrolled as indicated above is incorrect. There must have been at least 5,000 enrolled in the state.

It might be interesting to know that we haven't made any request for new members in over a year. The old members remaining in the clubs and the

new organizations that are constantly being formed by volunteer teachers and public spirited farmers give us more work than we can properly supervise. As stated above, the office has been neglected to meet the situation in the field and the field work has suffered because it was a physical impossibility for the club agent to cope with the circumstances. But for this our totals would have been much larger than those indicated above.

The promise of assistance, however, in the near future, is very encouraging. The people have just awakened to the sense of the real purpose of the work and it would be unfortunate to have their enthusiasm checked by lack of proper supervision.

Complete Report Boys' Club Work

	Enrollemnt	Reported	Production	Yield Per Acre	Cost	Total Cost	Total Valuation	Total Profit
Corn	1,074	234	13,902	53½	$ .54½	$ 7,590.68	$20,853.00	$13,262.32
Pigs, fattening	132	30	7,578	30 head	.11½	911.64	1,391.10	379.46
Pigs, growing	82	40	6,317	95 head	.08¾	1,080.93	5,849.05	1,109.08
Poultry	1,268	152		4,648 head		5,179.10	9,714.00	4,534.90
Cotton	87	45	93½ bales			10,035.10	15,127.65	5,092.55
Peanuts	86	27	5,548 bu.		.25½	1,431.84	12,060.00	10,638.16
Wheat	17	9	110 bu.	17½ bu.		55.00	247.50	192.50
Soybean hay	21	20	70 tons		17.50	1,285.00	3,500.00	2,215.00
Soybeans	17	1	67 bu.	44 bu.	.49	22.83	268.00	245.17
Irish potatoes	47	33	2,148 bu.		.51½	1,125.85	2,296.00	1,170.15
Sweet potatoes	79	46	4,205 bu.		.27¾	1,334.85	7,442.50	6,127.65
Tobacco	88	5	2,000 lbs.			300.00	400.00	100.00
Calves	22	22		22 head			1,000.00	
Totals	3,068	675				30,352.78	81,048.80	45,568.94

ESTIMATED REPORT BOYS' CLUB WORK

Corn		743	31,187 bu.				$38,961.00	
Pigs, fattening		535	61,150 lbs.				32,337.00	
Pigs, growing		18	2,550 lbs.				511.00	
Poultry		708		1,500 head			32,500.00	
Cotton		21	17,904 lbs.†				895.20	
Peanuts		14	380 bu.				970.00	
Soybeans		10	300 bu.				1,200.00	
Sweet potatoes		12	2,200 bu.				3,300.00	
Totals		2,060					110,674.20	
Total complete and estimated	3,068	2,735				30,352.78	191,723.00	45,568.94

†Seed Cotton.

Complete Reports Adult Club Work

	Enrollment	Reported	Production	Yield Per Acre	Cost	Total Cost	Total Valuation	Total Profit
Corn	150	36	1,677 bu.	46.58 bu.	$ 0.60	$ 1,006.20	$ 2,515.20	$1,509.30
Wheat	77	66	2,171½ bu.	17 bu.	.60	1,302.60	4,434.75	3,132.15
Pea hay	27	20	79 tons	2 tons	15.00	1,185.00	3,950.00	2,775.00
Alfalfa, clover, oats and vetch hay	27	20	607 tons		17.00	10,319.00	30,350.00	20,031.00
Coöperative purchases							20,544.20	949.26
Totals	281	142				13,812.80	61,794.15	47,981.35

Estimated Reports Adult Club Work

Corn		55	2,200 bu.		$	$	$ 2,500.00	$
Wheat		18	275 bu				518.75	
Hay		25	350 tons				18,000.00	
Coöperative purchases							70,000.00	
Totals		98					91,018.75	
Total complete and estimated	281	242				13,812.80	152,812.90	47,981.35
Grand total, boys' and adults' clubs	3,349	2,977				54,165.58	344,535.90	93,550.29

REPORT OF THE DIVISION OF HOME DEMONSTRATION WORK

To the Director:—There were 59 counties organized in home demonstration work in 1920, with an enrollment of 9,969 women and 8,529 girls. Total, 18,498.

This membership attended 8,340 meetings and carried out home-making programs in 462 clubs for women and 460 clubs for girls. Total attendance, 379,948.

Of all the counties in the state, Wake and Wayne have the largest enrollment. the greatest number of clubs and the best attendance at meetings.

Wake reports 28 clubs for women and 8 for girls, with a total membership of 575. There were 248 meetings held and the attendance was 10,304.

Wayne has 12 women's and 21 girls' clubs to her credit, with a total enrollment of 942. During the year 231 meetings were held, with an attendance of 9,000 people.

The program of work for club members in 1920 has been chiefly along clothing lines, especial stress being laid on dress design, millinery, and textiles. Foods, health, the installation of water and lights, home conveniences, interior decoration, beautification of home grounds, dairy, and poultry work have all come in for a large share of attention, but the high price of dress and millinery made the problem of how to fashion one's own hats and garments a paramount one.

Home Millinery

Systematic instruction in millinery with demonstrations was given in 42 counties, the club women and girls coming together for a short course to learn to refurbish old hats or to make new ones.

The home agent carried hats to club meetings and gave demonstrations of proper and improper styles for different types, using the club women and girls as models. When a hat designed for her own particular type was properly placed on a woman's head and color and trimmings suited to her were discussed there was no doubt that she caught the lesson.

A very definite course in the making of simple hats was outlined and instructions given as follows:

1. The selection of patterns.
2. Pattern drafting.
3. Making frames: Crinoline, buckram, wire.
4. Trimmings: Stitching, draping, tailored bows, simple flowers, wool, organdie, silk.

Most popular were the lessons given in refurbishing old hats and in the use of old material.

Not all home demonstration agents are millinery experts, but practically all have had good training in methods and in the actual making of hats. To agents who planned definite millinery work and who needed assistance in carrying it out, the state home demonstration office sent out skillful district or neighboring county agents to help give the instruction.

Reports from the different counties are interesting records of the results of instructions in millinery.

One agent writes, "Not only did my club members make hats for themselves, but they went home to instruct their neighbors. Hundreds of Wayne County women are wearing home-made hats."

Wilson County says, "A great many hats have been made at home and those bought are in a little better taste and perhaps are worn a trifle better for our instruction."

From the Johnston County agent's report the following is taken: "I think the most effective work done in my county this year was that in millinery. It was an inspiration to me to see how eager the women in the country were to learn to make things for themselves. It took very little advertising to get a crowd when a millinery demonstration was to be given. The most important phase of the work was in the selection of hats and in the making over of old material."

In Mecklenburg, where an accurate account was kept, a report is sent of 590 hats made by club women at an approximate saving of $3,540.

"I wish I had known, when I first began club work," says the Hertford agent, "that millinery would so thoroughly vitalize our organization. I go out to meetings all over the county and no one wishes to leave the fascinating millinery lessons. I am frequently until dark returning home. I don't believe I exaggerate when I say over 300 hats, ranging in cost from ten cents to seven dollars, were made at our club meetings."

Durham County reports over 200 hats made this summer.

In Transylvania the agent says the most popular work this year with women and girls has been in millinery. "Most of my club members live in the mountains and have very little money to invest in materials for hat making, so we have utilized old things to a large extent, with fine results. Where club members wished to use new material, gingham, outing, taffeta, and organdie were purchased. We have made all our frames of buckram and wire and the total number of hats made this summer has been considerably over 100.

New Hanover reported 250 hats made, at a saving of over $1,500, or $6 on a hat that would have cost $10.

Dress Design

A program of work in clothing, especially in dress design, has been put on in 49 counties, and 1,214 demonstrations in clothing were given. The results of these instructions have exceeded expectations.

As an experiment in Mecklenburg County a five-day school of applied design was held at Shopton, Dixie, and Observer. Instructions began at 2:30 and lasted until 5 o'clock each afternoon, and the attendance was fine, averaging 55 daily in each of the communities. Instructions and demonstrations were given to women and girls in selecting dress materials, selecting and altering patterns, planning the dress, the importance of color and design, cutting, fitting, and finishing. In addition demonstrations in testing textiles proved most interesting.

There were so many enthusiastic requests from clubs in other parts of the county that plans for similar intensive work are being made for other rural centers.

In Franklin County the club plan of work in sewing was with remodeling clothing entirely. The home demonstration agent says, "Two of our local women visited 18 communities with me. They wore remodeled dresses and hats and carried a suit case of remodeled garments to show as they talked to club members.

To demonstrate the results of the lessons taught in remodeling both dresses and hats, at our county fair the club women filled a booth sixteen feet square with remodeled dresses, coats, little boys' suits, and hats."

The sewing program for girls included aprons, club uniforms, dresses, and the making of curtains and decorative articles for their rooms. A notice of a meeting in Edgecombe County will serve to show the club girls' interest. "The girls in Runnymeade met on Monday for a lesson in the selection of materials. On Wednesday evening the instruction was in the cutting of a garment,

basting, and doing the flat fell. The girls are quite apt and are seemingly interested in the seams they are sewing."

Many of the clubs are interested in testing and knowing textiles. The Wake County agent has done particularly good work in this line and has, through her position as chairman of home economics of the State Federation of Women's Clubs, as well as county agent, been able to induce many women's clubs of the state to put on this good textile program:

1. Our every-day clothes.
2. Testing linens, woolens, and silks.
3. A study of economic household linens.

Foods

The program in food, its selection, preparation and the nutritive value has been the best and most far-reaching work of the Division of Home Demonstration Work since its organization.

Below are the number and kind of important demonstrations given by agents to groups of women and girls in 1920:

Utilization of vegetables, 376; dairy products, 353; poultry, 284; bread making, 741; child feeding, including school lunches, 575; invalid cookery, 276; steam pressure cookery, 270; fireless cookery, 384; canning, 1,616.

The school lunch demonstrations were very effective. Forty-two schools report hot lunches inaugurated through the efforts of the home demonstration club in the community.

The Wayne County agent reports: "I gave 12 demonstrations of proper school lunches in 1920, carrying with me a model container with a bottle and a well put together lunch.

"Many of our club women bought similar boxes for Christmas presents for their children and were much interested in proper packing. We are coöperating with the County Rural School Supervisor to have one hot dish for lunch introduced in the schools."

Bread Campaigns

The making of good bread has been greatly furthered by ten county-wide bread and biscuit campaigns held in Buncombe, Franklin, Granville, Greene, Hertford, Iredell, Perquimans, Sampson, Stanly, and Wayne.

The Sampson County agent says, "The campaign has certainly improved the quality of bread in Sampson County."

From Iredell comes: "I visited the different schools in the county, giving demonstrations. Practically every teacher in the county was enrolled to help and 971 school children saw the demonstrations of biscuit-making which I, with my assistants, gave, and went home to make and bake biscuits at least five times before they could enter the contest.

"There was first an elimination contest in each school, then one in each township, and the best biscuits from each township were selected to contest for the county championship."

The Granville campaign was amongst the first and pointed the way, just as Lincoln did in 1919.

The Granville agent carried from one community to another a small one-burner oil stove, with a good oven. With this she demonstrated the baking of the bread she had taught the club girls to make, and incidentally proved to the rural women the value of an oil stove in lessening the labor of cooking.

Sampson and Stanly counties sent each a little girl prize-winner to the State Fair to contest for a state prize, by making and baking biscuits before a large crowd in the Home Demonstration Building.

The girls' club at Pikeville is a group of girls from ten to eleven years of age. They are so much interested in cookery that their mother's say they

talk from one meeting to the next of their club work. The agent says, "After our lesson in beverages, Mrs. Taylor said to me, 'We had some delicious coffee for breakfast that Pauline made. She said she will give us tea tonight and cocoa tomorrow. She wants to cook all the time.'"

Canning

In 1920 the club women and girls filled a total of 1,509,773 containers with fruits, vegetables, preserves, pickles, and meats at a value of $528,061. The high price of sugar at canning time reduced very materially the amount of jellies, preserves, and jams put up by club members, and was a decided factor in the reduction in canned fruits.

There were 487 canning demonstrations given by club girls and 102 in drying.

The following equipment was made or purchased by club girls: Kneeling pads and tool aprons, 191; spraying outfits, 102; towels, 1,449; emblems, 201; jelly paddles, 168; driers, 40; sewing bags 2,117; caps, 937; uniform dresses, 249; canning outfits, 226; others, 1,345; garden tools, 242; holders, 777; aprons, 2,639; packing paddles, 488; fly traps, 807.

Number of home demonstration centers established in counties, 41: Used as kitchen, 19; used as canneries, 28; used as drying plants, 8.

Anson County club girls and women have for years done a good business in the sale of canned goods. The following story of what two boys did last summer shows that they pinned their faith to something more certain than cotton or tobacco.

TWO WADESBORO BOYS START COMMUNITY CANNING BUSINESS

Two little boys of Anson County, Walter and James Tice, who have always been interested in poultry and canning work, placed their large canner out in a grove and did canning for the people of Wadesboro during the summer. They were kept very busy all the time and some days were far in the night finishing up. They prepared the vegetables and did all the work for ten cents a can, and as they often remarked when asked how to do a certain thing, "We go exactly by the 4-H Brand book."

These two little boys were a real institution, aside from making a nice amount of money for themselves they saved a great amount of foodstuff for the people who had no way of saving it. Their father sells their surplus canned goods in his store and has a big demand for it.

They have very fine White Wyandotte chickens and have won prizes on them every year when exhibited at the State Fair.

Drying and Brining—Preparing Meats

Women have been interested in drying, brining, and particularly in smoking meat, making sausage, etc.

The following statistics are given: Number of pounds of dried vegetables, 27,315; dried fruit, 48,237; smoked meat, 1,597,500; sausage, 285,598; lard, 331,396: other products, 15,658. Number gallons of brined vegetables, 63,779; vinegar made, 28,172; fruit juices, 13,700.

Muscadine Grape Culture

A group of club members in 21 of the eastern and central counties have been growing muscadine grapes and utilizing to advantage the products of the vineyard.

Beautiful grape juice, marmalade, and other muscadine products were exhibited at the county and community fairs, demonstrating the value of this grape in the home and as a commercial product. There were 338 demonstra-

tions in the use of grapes given by agents. There were made by club members 5,425 pints of marmalade and other grape sweets, 1,212 quarts of grape sauce, 5,057 gallons of grape juice; 576 gallons of grape juice was sold.

Housekeepers' Week

To spread the gospel of "Good tools for good work," 12 counties put on what was called "Housekeepers' Week."

The Vance County agent says the coöperation of merchants carrying home conveniences was asked before perfecting plans for housekeepers' week and a program of demonstrations was arranged to show just how these conveniences might be used. The papers gave much publicity to the county-wide meeting at the county seat and women came in from all over the county. Many town women attended also.

As a direct result of the demonstrations merchants report sold to people in Vance County: 1 steam cooker, 15 oil stoves, 9 power washing machines, 2 cameras, 39 churns, 92 floor mops, 8 ironing boards, 6 electric irons, 15 refrigerators, 16 fly traps, 139 rolls of screen wire, 82 lawn mowers.

From Cumberland comes the report that the demonstrations of home conveniences at the township meetings during August followed by a four-day Housekeepers' Week at the county seat, brought out large audiences of farm women and men also. "We demonstrated the use of washing machines, steam pressure and fireless cookers, churns, and many small conveniences."

The first Housekeepers' Week was held in New Hanover County and resulted in the sale of 15 lighting systems, besides numerous oil and vapor stoves, electric irons, etc.

The Wilson agent reports that one company alone sold 180 lighting plants in that county indirectly due to the campaign waged.

In Transylvania County a motor truck was outfitted with an electric plant which furnished power to run a washing machine, electric iron, sewing machine, lighting plant, and a moving picture apparatus with rural life films. The truck carried also a fireless and a steam-pressure cooker, a victrola, and charts on the convenient arrangement of kitchens and the beautification of the home grounds.

With this truck the county home and farm demonstration agents toured the county, giving demonstrations and lectures in the afternoons and holding community meetings at night, when the moving pictures were shown. The people brought supper and ate it at the meeting place.

Much the same plans were carried out in Anson County.

The following statistics of home conveniences and of kitchen improvement have been sent in: Litghting systems installed, 556; water systems installed, 284; heating systems installed, 488; washing machines bought, 409; kitchens rearranged, 402; kitchen floors improved, 554; kitchen cabinets bought or made, 144; fireless cookers bought or made, 389; steam pressure cookers bought, 79; bread mixers bought, 77; bread raisers bought, 80; food choppers bought, 303; other labor-saving devices, 1,679; clothes hampers bought, 177; ironing boards made or bought, 448; wood boxes, 598; wheel trays, 112; others, 352; windows screened, 833.

Beautifying the House

Much interest has been manifested, especially by girls' clubs, in beautifying the interior of the home, and instructions and demonstrations have been given in doing over old furniture, treating old floors and walls, and in making draperies, rugs, and covers of simple materials for the home. The art of dyeing has also been taught and through it all the underlying principles of art in the home.

The Person County agent reports going to the homes of 22 women during April and May and demonstrating doing over old floors and treating dingy walls.

In Franklin County a member of the Winston club painted her entire house, mixing the paint and oil herself. She paid out only $8 for help, reducing the cost of painting a six-room house to $110.

From the counties come the following statistics: Floors improved, 571; walls treated, 741; sleeping porches, 75; flower boxes, 921.

Beautification of the Premises

Reports from club members in the counties show that they have been improving and beautifying the premises.

The Guilford County agent writes: "A large nursery company has coöperated with me in trying to beautify the home grounds in the county by letting me have a lantern, slides, and a lecturer to help arouse interest. Thirty-eight homes and ten schools were visited. The nursery company sent a landscape architect with me to make the individual visits and he suggested the use of native shrubs and trees and flowers and gave instructions for the planting.

That there might be demonstration centers established in the beautification of home grounds, the Robeson, Durham, Person, Davidson, Franklin, and Stanly agents were furnished with blue prints of the proper laying out and planting of the grounds of certain individuals and schools in their counties. Four of them report work started.

The following improvements have been reported: 346 fences repaired, 7,763 winter gardens planted, 1,045 trees planted, 605 shrubs planted, 214 lawns planted.

Campaigns

The following statistics show the number and kind of campaigns inaugurated by home demonstration clubs in 1920: Household conveniences, 1; bread, 10; fly eradication, 7; school lunch, 9; extermination of rats, 4; child feeding, 7; Red Cross, 5; anti-malaria, 1; others, 7.

In New Hanover the home demonstration agent coöperated with the county nurse in carrying out an anti-malaria campaign arranged by the North Carolina Landowners' Association. The campaign was an educational one and extended over 32 eastern counties in most of which home demonstration agents assisted. County Officials' Day was held by this Association in five eastern counties and on each program either the state agent in home demonstration work or one of the district agents spoke on "The Home." The heads of the departments of health, education, animal industry, and highway commission also presented the work of their departments.

Encampments

There were held in the state 32 county encampments for girls and boys. These club members came together for from 3 to 5 days at some suitable camping ground in the county, where either tents were set up or some school or other building was used to house the girls and boys.

The home and farm agents were in charge of these encampments and with the aid of local women and men carried out systematic plans for feeding, housing, and regulating the daily programs of the children. Programs, both of fun and instructions, were planned for each camp.

The Rowan County agent says of her camp, which was a typical one: I consider the boys' and girls' camp the most effective and far-reaching piece of work done in the county this year. The first week in August I, together with the Cabarrus County agent, held a camp at the China Grove Farm Life School. Ninety-seven girls and boys attended. I believe the associations along with the recreation, demonstrations, and instructions carried on at this time put

demonstration work on a solid foundation, as it made every one of those boys and girls hail club work as his or her greatest opportunity. More than 50 mothers and fathers visited the camp and were enthusiastic in their praise. Many women have asked me to put on a short course for them next year in a program such as we carried out in the camp.

"The Farm Life School has been filled this year, whereas it had only about 50 per cent of its capacity last year."

The girls' part of the camp program, in addition to the games and recreational features, consisted usually in lessons in table service, preparation of foods, the making of a hat, basketry, and personal hygiene. In no encampment could all of these be given, but in all at least two of the subjects were stressed.

Short Courses for Club Members

There were held last year in the counties 30 short courses for girls and 18 for women.

At Elon College, which was kindly tendered the division of home demonstration work, a short course for prize-winning girls from the different counties in the state was held.

The Farm Women's Convention enrolling 400 women was a three-day short course in foods and household management.

That county agents might be able to refresh themselves in home economic subjects a six-weeks' course was put on at the State College for Women, Greensboro, and such agents as could arrange to leave their work were urged to go.

Our Work With the Specialists

The North Carolina Division of Home Demonstration Work believes that the best way to forward the work of the specialists is through the home demonstration agent. One specialist can do very little towards instructing the club women in a state that has 100 counties, but if she multiplies herself a hundred-fold by concentrating her efforts on the county agent she can reach the individual club through that channel to which it has learned to look.

The June School For Agents

That this plan might be carried out courses were arranged by home economics specialists for county home demonstration agents each June.

In 1920 the call from club women for work in millinery and dress design was so compelling that Mrs. Nelson of Teachers' College, New York City, was secured to give the agents an intensive two-weeks course in millinery and Miss Wilkerson, of the University of Illinois, a week's course in dress design. The large sewing laboratory of the State College for Women was used and the results of these instructions are shown in the gratifying reports from the counties. The elective courses were Household Management, by the head of the Department of Home Economics in the State College for Women; Journalism, by the editor of the *Extension Farm News;* and the Conservation of Fruits, Vegetables, and Meats, by trained home demonstration women.

A very important piece of follow-up work in millinery instruction was that carried out through the coöperation of a big wholesale millinery house when it arranged for 25 agents to come for one week to its work-rooms and actually make hats under the supervision of its skillful milliner.

One of the most important things in the yearly school for agents is the conference to which the agents are called each day from 11:30 to 12:45. This period is given over to the discussion of administrative problems, and to comparisons of plans of work. On one day the conference period is left to the county agents for a discussion of their mutual problems, while the state and district agents confer in another part of the building.

Group Instruction

That special instruction might be given in home dairy work, small groups of neighboring agents were brought together at the most convenient place for a one-, two-, or three-day school.

Twenty-seven county home demonstration agents received this instruction in groups varying in size from two to four county representatives.

Midwinter Conference of Farm and Home Agents

In January or February each year the farm and home agents are called together with extension specialists for a conference and plans of coöperative work are discussed. For several years these meetings were held at Raleigh and the entire force was present. In 1920 the conferences were held in three separate towns, the different districts combining as was most convenient for them.

Conference of District Agents

On the second Tuesday of each month the director of extension, together with the state agents, assistants, and the specialists meet at Raleigh, to discuss plans of work and administrative matters. All of these conferences are inspirational as well as for business, and result in a better understanding and coördination of all the branches of extension work.

Fairs

There were held in the state in 1920 160 community fairs for white people and 28 for the negroes, 34 county fairs for white people and 9 for the negroes, 1 state fair for white people and 1 for the negroes.

Women trained in the county by home demonstration agents usually judge the community fairs, always serving in a community other than their own. At 91 fairs judges were supplied by the state office of Home Demonstration Work, thirty-three county agents and 8 other trained women going out in this capacity. The community fairs are almost wholly the outgrowth of the home and farm demonstration work, and are regarded by the agents as fine schools for the people. Score cards are used in judging and as this is done before the public and awards explained, results have been most satisfactory.

Forsyth County presents the following program followed at community fairs:

Opening at 10 a.m., when all exhibits must be ready for judges.
Community singing.
Address by speaker.
Picnic dinner.
Better babies' contest.
Discussions of exhibits, with explanations of reasons for awarding premiums.
Athletic contest and field sports.

In Gaston County "There were 14 well-arranged mill community booths at the county fair, contesting against each other."

The Mecklenburg agents writes: "One of the most satisfactory things we have done in the county this year was the organization of a County Community Fair Association. A committee from this association canvassed for advertisements and paid for the coöperative premium book of the seven community fairs. They had enough money left after paying for printing to give each fair $90.

"The Association offered prizes of $100, $75, and $50 for the best community fair."

At a community fair in Davidson County one club woman arranged a cottage cheese booth with seventeen attractive and palatable dishes prepared from cheese. Another gave a steam-pressure cookery demonstration, arranging nearby in an attractive manner all of her meats canned by steam pressure.

The county fairs drew from the community fairs and in addition to good exhibits of pantry supplies, canning, garden products, clothing, including dresses and hats, there were given some of the same demonstrations described under state fairs.

State Fairs

At the State Fair in Raleigh, in the building which was erected for home demonstration work, important phases of work for women were demonstrated. Around the walls were 10 booths, in each of which two home demonstration agents presided, demonstrating the following: Dress design, millinery, the testing of textiles, the selection and preparation of foods and kitchen conveniences, laundry work with improved machinery, beautification of the home grounds, beautification of the interior of the home, budgeting the income, and nutrition. The nutrition booth was in coöperation with the State Board of Health, and the Division of Farm Engineering put on in one booth a demonstration of how water may be installed in the farm home.

Down the middle of the building was an exhibit of fruits and vegetables in glass from forty counties.

It was interesting to see men, women, and children crowding around the booths when demonstrations were in progress. The busy washing machines, with the electric irons, the ironing machine and the convenient ironing board, and the demonstrations in removing stains held an audience which blocked the aisle. Next came the booth showing how lights and water could be installed in the farm home and the proper use of the farm power and lighting plant in running all kinds of household machinery. This booth was arranged by the Division of Farm Engineering.

The booth in which food was prepared was perhaps the most popular. Every day the fireless cooker turned out, piping hot, different cuts of meats, fowls, and vegetables, to say nothing of beautifully baked loaf cake. The steam-pressure cooker was used to show the saving of time in the cooking of meats, peas, beans, etc., and a good oil stove proved that a housewife could save herself much trouble and time if she would use it as a substitute for the wood-stove in most of her cooking. High stools, a high sink, the dish washer and dish drainer, with conveniently placed tables and equipment, when demonstrated, drew many questions from the audience as did the selection and care of food, balancing meals, and what to do with left-overs.

The nutrition booth was arranged in coöperation with the State Board of Health, the home demonstration agents taking the proper feeding of the child of pre-school age and the adult, while the Health Division dealt with infant feeding.

Menus were made out for children of different ages and the actual food attractively placed on white tables and covered with net. Breakfasts, dinners, and suppers were all there, and the home agents were there also to answer questions and to make suggestions.

When weighing a country boy of 14, who was 17 pounds under weight for his height, the home agent asked his mother if the boy drank milk. "All he can get," said she, which proved to be one glass of buttermilk a day. When told that the boy needed to be built up, and that a quart of whole milk a day would do wonders for him, she turned to her husband and said, "There now, I told you we ought to have a cow."

In the dress design booth the demonstrations were with the use of patterns, how to enlarge or make smaller, and in the suiting of the design to the person. Home-made dresses were used in these demonstrations, most of them being sent in by club members.

The millinery booth showed many home-made hats and two home agents demonstrated making simple frames, covering frames with outing and silk, and making simple ornaments.

These two booths always held an interested crowd.

The test for textiles rivaled the preparation of food in popularity. Both men and women watched the burning of an old silk necktie or silk stocking for which good money had been paid, only to find out that the money had gone for an article heavily loaded with metal. Wool tests showed almost as much cotton adulteration in the fabrics, and the leaflets telling how to make the textile tests were eagerly taken up by the interested spectators.

That a girl might see a bed-room simply but attractively furnished with things to be found at home and a few inexpensive hangings, a set of golden oak furniture, which had been treated with varnish remover and painted ivory white, was placed in a booth. The walls were hung with unbleached muslin, dyed in strong tea, and on the floors were home-made rag rugs in old blue. The bed-spread and scarfs were of the same dyed unbleached muslin, with appliqued designs. Bits of old rose and yellow in shades and pottery completed a most attractive room.

Beautification of home grounds was demonstrated by filling the floor of a booth with sand and placing a farm house with the different outbuildings in a good setting of native shrubs and flowers. The grounds were laid off according to a well-planned design and the idea of mass planting was well brought out.

The last booth was given over to budgeting the family income and posters with telling figures were hung where the passer might read and ponder.

County Councils and Home Bureaus

Each county agent has felt the necessity of having a council of county women as an advisory and supporting body behind her work.

Thirty-three counties have formed such organizations with a total membership of 1,108.

These councils meet with the county agent once a month.

At the Farm Women's Convention in August, at Raleigh, delegates came from many of the county councils and decided to federate their organizations into a State Home Bureau. As a result 11 counties have already federated.

A campaign for membership in this organization will be begun in January.

North Carolina's Home Bureau is the first in the South and the second in the United States, New York preceding us.

At the December meeting of the Anson County Bureau 70 women came in from the country and 10 from the town to attend the morning and afternoon sessions at the courthouse. Reports were read from the various clubs and as this was called an economy meeting on account of the hard times, all kinds of things made at home were exhibited as helps to conserve the family finances. Home-woven rugs were prominent, and, by the way, one particularly skillful weaver sold what she brought and went back home with $18 and orders for more in her pocket. Children's clothes made from old suits, made-over dresses, home-made hats, and beautiful canned products were exhibited.

A Unit of the Wayne County Bureau

"I am so proud of the progress of the Dobbersville Club," says the Wayne County agent. "It is twenty-five miles from Goldsboro, near the Sampson County line, and the people generally do not get out much. The club there began with 4 members and now they attend the home demonstration club meetings 30 and 40 strong, always bringing most as many children. Sometimes the husbands come along with them. We had to stop having meetings at private homes for lack of seating capacity, so we have gone to the school, and in the summer we use the yard.

"Every member is interested and eager to carry out any ideas gotten at the meeting and I feel if the work in Wayne had amounted to no more than that done in this club, it would have more than paid for itself."

Statistics

Number of restrooms established, 8.
Number of women planning household budgets, 1,037.
Number of women keeping household accounts, 883.
Number of demonstrations in bee keeping, 79.

Poultry

Poultry club work was carried on in 25 counties by the home demonstration agents. In other counties the farm agents had it in charge. All instructions were sent out by A. G. Oliver, Poultry Club Specialist.

Agents report in 25 counties an enrollment of 1,938 girls, including a few boys, and 696 women fulfilling minimum requirements of club membership.

Number members taking charge of entire flock, 237.
Average number of fowls in flock, 31.
Number members purchasing standard bred stock, 736.
Number members purchasing purebred eggs, 971.
Number members using standard bred males at head of flocks, 829.
Number members making brooders, 325.
Number poultry houses built, 296.
Approximate number of chickens raised, 141,381.
Approximate number of chickens fattened for market, 58,318.
Number pounds market poultry sold, 184,162.
Number pounds poultry eaten at home, 221,790.
Number fowls culled, 711.
Number members producing infertile eggs, 136.
Number dozen eggs preserved in water-glass, 1,201.
Number dozen eggs used at home, 11,157.
Number dozen eggs sold, 5,897.

Lee County reports 38 poultry entries at community fairs and Guilford reports demonstrations at 20 meetings, showing how to prepare and serve poultry products.

The report of Saidie Covington, of Anson County, is interesting:

"On the first of January, 1920, I had 120 Rhode Island Reds. I sold from them to the first of May:

92 birds for breeders	$557
Eggs for hatching, 42 sets	182
Eggs sold for market	30
Eggs used at home	30
Total	$799

I set 120 eggs and hatched 107; raised 100 chickens.

Cost of feed until May 1st	$ 55
Cost of advertising	10
Total cost	$ 65

Kept on hand 25 hens:

I value 10 at $7 each	70
I value 15 at 5 each	75
I value 2 cockerels at $15 each and 1 at $10	40
Total value of birds on hand	$185

Dairy

Reports come in from 34 counties of work done coöperatively with Division of Animal Industry by home demonstration agents.

The home demonstration agents in 27 counties received instruction in dairying by specialists from the Animal Industry Division. These instructions were given to groups of from 3 to 5 at different periods and places and enabled the home agents to put on a much better dairy program in her clubs.

The following extract from the Guilford County report gives an idea of how work was carried on: "We held meetings with each woman's club when Mr. Kimrey, Dairy Specialist, talked on the value of milk and butter in the diet, and the handling and marketing of milk and butter. He gave a demonstration of butter-making.

"We have given demonstrations in cottage cheese-making to club women also.

"A decided improvement in all dairy products was shown at our community fairs this fall. The butter was in brick molds and so uniform in color and quality that it was very hard to judge.

"The use of milk has been stressed in our club programs for the school lunch and the school lunches exhibited at the fairs all included a bottle of milk.

"Almost every club woman in the county has at least one cow."

Statistics

Approximate number of dairy cows in 34 counties, 35,958.
Average price of milk per gallon, 66 cents.
Number cows purchased through agent's influence, 178.
Number demonstrators enrolled in butter making: Girls, 56; women, 692.
Number demonstrations given in butter making, 744.
Number pounds butter made, 93,205.
Number pounds butter sold, 19,679.
Average present price per pound of butter secured by demonstrator, 62½ cents.
Average price secured for other home-made butter, 56 cents.
Number demonstrators enrolled in cottage cheese making: Girls, 100; women, 444.
Number demonstrations given in cheese making, 96.
Number pounds reported made, 19,627; sold, 5,249; average price per pound, 55 cents.
Number pounds cream sold, 638.
Number demonstrations given in milk cookery, 338.
Number families using more milk in family diet, 1,251.
Number schools securing milk for the school lunch, 61.
Number pupils in these schools, 4,197.
Equipment made or purchased: Brushes, 142; molds, 308; milk pails, 379; barrel churns, 181; others, 15; butter workers, 95; sanitary strainers, 239; cheese presses, 25; shotgun cans, 65; paddles, 419; dairy thermometers, 99; iceless refrigerators, 113; separators, 134.

Negro Work

Home demonstration work for the negroes was organized in 1917, and from that year to 1920 colored supervisors with home economics training were appointed as assistants to the white home demonstration agents in 41 counties. These assistants were employed for two months and traveled about the county to show the negro housewife how to garden and can, as well as to demonstrate the preparation of food, the balancing of rations, the use of home conveniences, and to instruct in sanitation.

In counties which had no negro assistant the county agents demonstrated at negro meetings and rendered all the assistance possible. Our specialists and district agents also attended special negro meetings and reported great interest.

The result of this work was most satisfactory, as is proven by the 1919 statistics:

Summary of Colored Work For 1919

Number of girls' clubs organized, 202.
Number of women's clubs organized, 232.
Number of girls enrolled, 5,354.
Number of women enrolled, 7,009.
Number of gardens, 3,475.
Demonstrations held, 1,007.
Number of homes visited, 6,660.
Number of clubs visited, 952.
Number club members visited, 4,618.
Miles traveled, 20,509.
Meetings held, 1,259.
Attendance, 45,585.
Conferences, 3,332.
Letters written, 3,519.
Bulletins sent, 15,532.
Number cans and jars filled, 476,811; money value, $140,211.30.
Pounds vegetables dried, 8,751; money value, $1,225.14.
Pounds fruits dried, 16,810; money value, $3,779.06.

This work was done on a Federal emergency appropriation which was cut off, necessitating the dropping of paid negro workers in 1920. However, plans are being make to continue these workers in 1921.

That interest might be kept up and the work tided over until 1921, the county home demonstration agents, with the voluntary assistance of the colored county workers, directed some home work for the colored women and girls in 27 counties.

The Beaufort County agent says: "I have given the colored rural supervisor in this county lessons and demonstrations of bread making, securing free yeast for her; also lessons in home millinery, and anything else that I stress in my white clubs, and she in turn demonstrates to the colored women. While she is not paid by us she is much interested in the uplift of her race, and very often goes with me on trips and holds meetings for the colored women while I meet with the white."

The Robeson County agent, who has been doing some good work with the colored people, writes: "Following our county fair we gave the negroes four days and our fair grounds for their county fair. I gave my entire time to them for three days and helped them to carry on their fair with system and ease and did all the judging of the home economics work. After the judging I gave the women instructions in canning, pointing out the good and bad points in their work of the season. We have yet another community fair with them, at which I expect to do the judging and have given instructions for the carrying out of this just as I did in the county fair. I have consented to give several office hours to the colored teachers and to the colored school supervisor for their instruction in millinery and thus arrange to introduce some millinery work to certain groups and to assist them in purchasing the goods from which the hats would be made."

The Mecklenburg home demonstration agent says: "I helped the colored people of the Lytell Grove community put on a fair, planning for it, making out the premium list, and judging for them.

"It was a fine fair for a first attempt, and compared most favorably with many white fairs I have seen. The canning showed up well the work of the colored home demonstration agent, Fannie Butler, last year. They had a premium list of $150, which they raised themselves. About 500 people were present that day."

Report of home demonstration work among the negroes in New Hanover County:

Talks on food at schools (using food charts), 6; distribution of bulletins on foods and cookery, 300; assisted county rural supervisor in planning the courses of study where home economics is taught and in making out the equipment for these schools; with the assistance of the Landowners' Association lectures and slides on hookworm, malaria, and typhoid fever were given in every community in the county and bulletins on malaria given out and studied by the school children; under the rural supervisor, Sadie Wilson, the community home demonstration clubs, which were organized in 1919, were kept up and held meetings at various times during the year.

There is not a home agent in demonstration work who is not eager to see work for negro women and girls continued. The results in each county organized were so marked, and the desire for instruction so manifest, that the Home Demonstration Division feels no better expenditure of funds could be made than that for the payment of the negro assistants.

State Agent's Statistics

Miles traveled, 6,784; talks given at meetings, 31; attendance, 6,987; conferences, 528; letters, 2,830; circular letters, 694.

District Agent's Statistics

Miles traveled, 33,304; meetings held, 442; attendance, 37,873; agents visited, 277; letters, 4,144; circular letters, 2,157; bulletins, 3,069; conferences, 3,166; number articles prepared for publication, 170.

County Statistics

County	Number Clubs	Enrollment	Attendance	Number County Councils	Number Fairs or Exhibits	Number Encampments	Number Demonstrations—Cooking	Number Demonstrations—Clothing	Number Campaigns Inaugurated
Alamance	11	165	1,256	1	3		5	5	
Anson	20	320	3,150	1			31	10	
Beaufort	17	421	4,397		3	1	84	3	1
Bertie	40	1,265	2,750	1	3	1	355	150	1
Bladen	15	183	5,803		4	1	16	8	
Brunswick	12	240	1,600	1	2		10	20	2
Buncombe	19	357	9,074	1	63	1	113		2
Cabarrus	12	477	6,792	1	5		6	6	
Catawba	11	160	3,360				8	25	
Cleveland	11	229	2,841	1	2		9	18	
Columbus	8	290	350		3	1	14	13	1
Cumberland	18	331	2,352		3		37	4	
Davidson	14	164	947	1	8	1	8	10	1
Durham	17	247	3,605	1	2	1	16	8	
Edgecombe	20	330	1,938	1	3	1	8	6	2
Forsyth	26	364	9,053	1	7		31	17	3

County Statistics—Continued

County	Number Clubs	Enrollment	Attendance	Number County Councils	Number Fairs or Exhibits	Number Encampments	Number Demonstrations—Cooking	Number Demonstrations—Clothing	Number Campaigns Inaugurated
Franklin	15	266	7,043	1	6	1	21	75	4
Gaston	24	788	3,279	1	6	1	22	4	2
Granville	15	144	5,546		13	1	54	5	1
Greene	17	176	5,000	1	1		18	15	1
Guilford	12	314	6,592		4		41	16	
Halifax	18	409	7,358	1	2		120	75	
Harnett	11	145	6,680		2		38		
Hertford	14	258	3,479	1	3	1	31	12	
Iredell	19	251	4,247	1	4	1	62		1
Jackson	12	120	962				19	8	
Johnston	26	557	10,739	1	5	1	46	9	
Lee	8	154	2,543		4		31	10	
Lincoln	9	560	8,947		1		44		3
Madison	9	114	725	1	4	1			
Martin	13	155	4,102	1	3		48	75	
Mecklenburg	13	513	12,388	1	7	1	7	165	
Moore	13	130	2,982		2	1	36	15	
Nash	17	185	1,500				12	6	
New Hanover	14	220	4,708	1	3	1	37	27	7
Northampton	18	345	2,159		1		38		
Onslow	6	65	4,010	1		1		2	
Pasquotank	24	760	4,628	1	3	1	57	10	
Pender	17	180	1,376	1	1		10	1	1
Perquimans	12	392	2,867	1	2		13	10	1
Person	20	216	4,527	1			17	11	2
Pitt	16	175	2,427	1	2	1	27	8	1
Richmond	20	333	3,795	1	2	1	141	18	
Robeson	19	377	2,909	1	9	1	1	60	
Rockingham	11	306	4,662	1	8	1	43	2	
Rowan	14	313	4,517	1	5	1		18	
Rutherford	13	227	3,623		4	1	24	8	
Sampson	21	320	2,737			1	46	5	1
Stanly	18	217	7,051		6	1	21	4	3
Swain	8	80	557				13	12	
Transylvania	7	286	5,245		4	1	30	4	
Union	10	180	2,220		2	1	42	15	
Vance	11	273	5,641		2	1	47	6	
Wake	36	573	121,932	1	8	1	91	28	
Warren	7	70	1,275				9		
Washington	11	399	6,697	1			53	8	
Wayne	33	942	9,000	1	5		17	24	1
Wilson	20	467	18,025	1	2		68	140	1
Totals	922	18,498	379,948	36	247	32	2,246	1,214	43

Food Conservation Statistics

County	Number Gardens	Number Winter Gardens	Number Containers Fruits and Vegetables	Number Cans Meats	Number Pounds Fruit and Vegetables Dried.	Number Gallons Grape and Fruit Juices	Number Pounds Sausage Made	Number Pounds Smoked Meats	Number Pounds Lard
Alamance	60		3,900			175			
Anson	325	280	50,585		1,600	100			
Beaufort	300	200	66,375		100	90			
Bertie	4,000	2,750	46,165	300	1,000	275	15,000	50,000	2,150
Bladen	150	40	11,410	450	300	100	1,000	4,000	800
Brunswick			6,210		32				
Buncombe			18,200		2,000				
Cabarrus	700	400	9,930	50	1,700	75			
Catawba									
Cleveland		100	10,897		834	46			
Columbus	200	150	10,799	1,000	824	24	2,350	21,600	3,652
Cumberland			20,400	200					
Davidson	80	30	17,000	75	900				
Durham	200	20	3,862	35		6			
Edgecombe	112	50	30,942		3,864	49			
Forsyth	164	23	15,500	78	800	10			
Franklin	200	175	45,903		1,500				
Gaston	400		11,280		300	60			
Granville	200		27,000		1,000				
Greene	172	5	2,180						
Guilford	131	75	47,125				18,000		10,000
Halifax			75,900		11,000	6,500			
Harnett			3,050				100	500	
Hertford			16,546		1,260	225	4,720	42,400	8,410
Iredell			17,000		2,900				
Jackson									
Johnston	480	143	122,490	186	1,600	140			
Lee	130	130	11,503	224	1,237		2,599		4,686
Lincoln	500	25	15,800	1,325	1,000	132	5,000		10,000
Madison									
Martin			4,500		100	10	2,000		4,000
Mecklenburg	200	144	34,460		1,012	250	10,544	53,200	11,828
Moore	300	75	59,100		12,600	500	5,500	9,000	12,000
Nash									
New Hanover	450	300	17,620		1,000	36	65	3,000	50
Northampton			2,443	5,901	523	15	1,520		3,805
Onslow			650						
Pasquotank	300	300	7,350	75	3,000	500	10,200		12,000
Pender			7,250		435	375	5,000		4,000
Perquimans	52	52	4,250	75	1,185				
Person			16,900	450		112			
Pitt		3	5,062		100	80			
Richmond	250	208	33,779				400		10,000
Robeson			7,000						
Rockingham	95	25	12,885	20	823	30	800		1,200
Rowan			10,250						
Rutherford	500	200	7,050		450	35	800	2,000	850
Sampson			104,000	400					
Stanly			5,085						
Swain									
Transylvania	15		5,300	25	75			1,000	
Union			58,200		1,000	300	5,000		5,000
Vance		75	8,515	200		140	200		200

Food Conservation Statistics—Continued

County	Number Gardens	Number Winter Gardens	Number Containers Fruits and Vegetables	Number Cans Meats	Number Pounds Fruit and Vegetables Dried.	Number Gallons Grape and Fruit Juices	Number Pounds Sausage Made	Number Pounds Smoked Meats	Number Pounds Lard
Wake			15,000		10,000	500	75,000	1,200,000	100,000
Warren									
Washington	2,000	1,500	18,381			45	2,000		8,000
Wayne	464	45	45,960	95	4,848	2,355	99,800	210,700	98,765
Wilson	240	240	59,950		2,650	410	18,000		20,000
Totals	13,370	7,763	1,254,895	11,164	75,552	13,700	285,598	1,597,500	331,396
Preserves and jellies			241,364						
Fish and oysters				2,350					
Grand totals	13,370	7,763	1,496,259	13,514	75,552	13,700	285,598	1,597,500	331,396

Improvement in Homes and Yards

County	Rearrangement Kitchen	Kitchen Conveniences	Fireless Cookers	Steam Pressure Cookers	Improvement in Floors	Walls Improved	Screening	Water Systems Installed	Light Systems Installed
Alamance			3	1	1	1			
Anson		10			5	5		16	26
Beaufort			50	10			30	1	6
Bertie	75	570	20	10	275	375	150	25	50
Bladen		5				10	1		
Brunswick			5				3		3
Buncombe			6	18					
Cabarrus								2	
Catawba									
Cleveland									6
Columbus	5	22	5	2	23	8	30	3	35
Cumberland									
Davidson	7	28	3	3	4	3	12		
Durham	10	1	3	3	4	2	4	2	
Edgecombe	2	20			3	4		8	6
Forsyth	11	18	17		13	5	21	7	17
Franklin	2	13	2	1	6	5	12	7	58
Gaston		3	4		16	4			2
Granville									
Greene		1	2					4	6
Guilford			4		15	10		4	4
Halifax			25		4		10	5	15
Harnett			14						
Hertford	8	12	1		10	6	12	3	6
Iredell			4	3	8		4	5	6
Jackson									
Johnston	11	6	19	2	16	7	17	2	6
Lee	4	10	6	2	9	1	4	3	3

Improvements in Homes and Yards—Continued

County	Rearrangement Kitchen	Kitchen Conveniences	Fireless Cookers	Steam Pressure Cookers	Improvement in Floors	Walls Improved	Screening	Water Systems Installed	Light Systems Installed
Lincoln	12	18	12	5			12	6	6
Madison									
Martin		3	25						
Mecklenburg	80	1,468	24		272	144	25	18	25
Moore	25	6	30	4	15	3	30	15	20
Nash									
New Hanover	32	23	25		55	15	29	18	35
Northampton		12	4						
Onslow									
Pasquotank	15	53	6	2	45		50		
Pender								6	6
Perquimans									
Person	1	3	4	2	45	6			
Pitt	1	7			7	3	7		
Richmond	25				75		250	3	3
Robeson									
Rockingham	5	2	10		6	6	2	5	2
Rowan									
Rutherford	4	10	6		20	50	10	8	5
Sampson	20	40	25		35	8	40	50	60
Stanly		5				1	10		
Swain									
Transylvania	1		1	4		1	2	6	3
Union	16	11	10		22	10	18	24	24
Vance	10	18	2	2	15	16		4	25
Wake									
Warren									
Washington		18		5	40		10		
Wayne	15	23			18	17	13	20	55
Wilson	5	9	12		45	15	15	4	42
Totals	402	2,448	389	79	1,127	741	833	284	566

Improvements in Homes and Gardens

County	Heating Systems Installed	Washing Machines	Other Laundry Equipment	Lawns Planted
Alamance				
Anson		15	20	
Beaufort				
Bertie	15	75	175	75
Bladen				
Brunswick				
Buncombe		2		
Cabarrus				
Catawba				
Cleveland				
Columbus	2	3	55	15

Improvements in Homes and Gardens—Continued

County	Heating Systems Installed	Washing Machines	Other Laundry Equipment	Lawns Planted
Cumberland				
Davidson				
Durham		4	14	
Edgecombe		2	4	
Forsyth	1	7		3
Franklin		14	4	3
Gaston		33	62	2
Granville				
Greene				
Guilford		7	1	3
Halifax		5	5	10
Harnett				
Hertford				
Iredell		4	2	
Jackson	2	3		
Johnston				
Lee	4	4	12	9
Lincoln				2
Madison		6	6	6
Martin				
Mecklenburg				
Moore		72	310	
Nash	9	9		
New Hanover				
Northampton	3	20	8	28
Onslow				1
Pasquotank				
Pender				
Perquimans				
Person				
Pitt			3	
Richmond		6		4
Robeson		20		
Rockingham				
Rowan				4
Rutherford		6	74	
Sampson	2	6	23	20
Stanly		20	20	
Swain				
Transylvania				
Union		1	1	1
Vance			6	
Wake	10	15	16	
Warren				
Washington				
Wayne			15	20
Wilson		24	35	1
		26		7
Totals	488	409	871	214

Respectfully submitted,

JANE S. MCKIMMON,
State Home Demonstration Agent.

REPORT OF THE DIVISION OF AGRONOMY

To the Director:—The extension work in the Agronomy Division has suffered somewhat during the year by the loss of the Plant Club agent and by the main Extension Agronomist to more lucrative positions. In Agronomy Extension, as in any work, the continuity of service of well equipped men is of the highest importance if best results are to be secured. In the main the extension work has been carried on along the lines indicated below:

Community Cotton Improvement

This work was continued during the year with communities already organized, new work having been started with six other communities in six different counties. With the new work started this season, twenty-four counties have received aid in this work. It has reached directly more than 800 cotton growers and influenced them to plant seed of the more improved varieties of cotton best adapted to their different sections. As noted by correspondence and by observations with leaders in communities where tests have not been made, many times the above number have been influenced indirectly to grow the better varieties of cotton. During this season more than 75,000 bushels of pure seed of improved strains will be grown under the supervision of the Division of Agronomy. This work has increased the interest of the progressive farmers in securing good seed from breeders and in keeping it pure and high yielding by saving good seed in the field and using more care in the handling and ginning of seed cotton.

So favorably has the work impressed the growers of Edgecombe County that eight of its most progressive growers have engaged the services of an expert plant-breeder to devote all his time next year in selecting seed of all of their main crops, and in otherwise improving their crop yielding power.

Since the cotton community work was started in 1914, fifty-six communities have been supplied with improved seed. In all except one community the improved strains recommended by the Division of Agronomy have produced a larger money value per acre than the varieties generally grown in the community. The improved strains have yielded increased yields to the value of from $5 to $60 per acre more than the unimproved varieties commonly grown in the communities, and in all of the tests conducted during the past five years the improved strains have averaged $28.97 per acre more in value than the varieties previously grown in the communities.

Long Staple Cotton For North Carolina

During the past two years considerable interest has been shown in the growth of long staple cotton. This has been due to a large extent to the increased price offered for this cotton. A few growers of the state have grown long staple cotton successfully for several years, while many others have been disappointed after one year's experience. The disappointments have usually come from the use of poorly-bred seed and the lack of a long staple market. Since the value of long staple cotton is dependent upon its length and uniformity it is very essential to use pure-bred seed. Isolated growers have found it very difficult to get the true market value of their long staple cotton, and even large growers have found it necessary to sell at lower prices than prevailed on other markets in other localities.

A few growers are of the opinion that recently improved long staple cottons yield equally as well as the short staple varieties. In order to furnish reliable information on this subject the results of thirteen cotton variety tests conducted in the Coastal Plain section are given below. In each case the highest yielding short staple variety and the highest yielding long staple variety have

been compared. The short staple varieties have averaged 572.6 pounds of lint and 925.2 pounds of seed per acre, while the long staple of 1¼-inch quality yielded 364 pounds of seed more per acre than the long staple varieties. With this difference in yield the 1¼-inch cotton should bring 32 cents per pound for lint when the short staple cotton is selling for 20 cents in order to give the same returns per acre. When short staple cotton is selling for 30 cents the 1¼-inch cotton should sell for 48 cents in order to bring the same returns per acre. These differences in price only take into account the differences in yield. Pure planting seed of the long staple varieties usually will cost more to maintain than will those of the best short staple varieties. If one goes to the trouble of selecting his own seed each year it will require much more time to keep the long staple varieties uniform and productive than would be required for the short staple variety. It is estimated that at least two cents per pound should be added, therefore, to cover the extra cost of producing the long staple cotton and keeping it pure. With this addition to the difference in yield 1¼-inch cotton should sell for about 34 cents per pound when short staple sells for 20 cents; or 50 cents when the short staple is selling for 30 cents.

Soybean Improvement

Four varieties and five pedigreed strains of soybeans have been distributed in sections of the state where they are best adapted. Special efforts have been made to interest the growers of the Piedmont and mountain sections to grow more soybeans. Strain No. 101 from Mammoth Yellow has proven a high yielder in the eastern Piedmont and Coastal Plain sections. Strain No. 38 from Haberlandt and No. 11 from Virginia have given unusually good results in the Piedmont and mountain sections. Special soybean campaigns were conducted during the year in Bladen, Person, and Columbus counties. Similar work was arranged for in other Piedmont counties, but had to be cancelled on account of the influenza epidemic.

Community Corn Improvement

During the past season thirteen communities have been given aid in the selection of seed corn. The Cherryville Community Test and Corn Show of Gaston County was one of the most successful during the year. This work was conducted in coöperation with the First National Bank of Cherryville and has been very satisfactory in arousing the farmers' interest in the importance of good seed. This season the best varieties of the community were included in a variety test in order to decide upon the one best variety for the community. Mr. Garrison spent one week in Iredell County giving demonstrations in the selection of seed corn in the field. This work is planned to be encouraged and special stress to be given to the selection for uniformity and high yield.

Community Wheat Improvement

During this fall 340 bushels of pedigreed Leap's Prolific wheat were distributed to thirty-eight growers in twenty-two counties. This pure seed should furnish sources of good seed to the communities in which they live. In six communities wheat variety tests are being conducted this season to compare the improved strains with varieties commonly grown in the communities.

Field Crop Culture Experiments

At the Piedmont Branch Station farm the rate and date of seeding wheat and oats have been continued. From a five-year average the best dates for seeding wheat have been shown to lie between October 15 and November 1. Six pecks per acre proved the best rate for wheat, when the seeding was made between October 15 and November 1. According to the results from the date

of seeding tests, the growers of this section are reducing their possible yields two to six bushels per acre by planting ten days to three weeks too late.

Similar experiments have been conducted with oats. The best dates for seeding oats have ranged between October 1 and 15, and a rate of seeding of eight pecks has given the best results. Seeding of oats made as early as September 1 or 15 were badly damaged by rust, and were more severely injured by cold than later plantings.

During the past season two distance tests of cotton were started, one on the Central and the other on the Coastal Plain Branch Station Farm. The results from these tests have not been completed.

Soil and Crop Extension Work

Some extension work in agronomy was done in this state during November and December, 1919, by S. L. Jeffords, who was with us for only a short time. E. C. Blair took up this work in July, 1920. For the time between the period of Mr. Jefford's leaving and Mr. Blair's assuming the duties of Extension Agronomist, but little work was done along agronomic lines, except now and then by members of the regular staff, except as indicated elsewhere in this report.

The principal problems worked on have been to induce farmers by work in their community to increase their yields of the crops now being grown, (a) by improving the soil; (b) by adopting good rotations; (c) by more efficient methods of culture; (d) and by the use of better seed. In some instances it has been considered advisable to recommend the growing of certain legumes for soil improvement, in addition to those already being grown on the farms.

Soil improvement is to be effected by the rational use of commercial fertilizers, by the use of lime in connection with legumes, and so far as practicable supplemented by the use of farm manures. A crop rotation of from three to five years is necessary in order to bring in legumes for adding organic matter to the soil. The introduction of new varieties of crops is often advisable and is being followed up by encouraging farmers to improve their seed by proper methods of field selection. All of the above problems have been attacked in a general way by going into counties and dealing with the problems of the county in meetings at schoolhouses and on the farms of groups of farmers. Some demonstrations with crops and fertilizing materials have been conducted with splendid results.

The Experiment Station has conducted experiments in all parts of the state during the past many years and has available a large amount of practical information to take to farmers. This data relates to the proper kind and amount of fertilizer for different crops in all sections of the state, the use of lime, rotations, cultural methods, variety tests of all important crops, and seed improvement. The main problem now is to spread this knowledge among individual farmers and for them to utilize it to best advantage.

Some exhibits showing the results of field work have been arranged and made, showing the following:

(a) The effect of lime on red clover; by means of charts and enlarged photographs.

(b) The plant food content of principal North Carolina soils; by blocks of different sizes and colors, representing the amount contained in each type of soil.

(c) Seed of leading varieties of wheat, oats, cowpeas, and soybeans.

(d) Specimens of leading varieties of sorghums for different sections of the state.

This exhibit attracted considerable attention on the part of farmers.

Work has been done since July 15 in the following counties: Lincoln, Buncombe, Orange, Davidson, Rockingham, Cabarrus, Davie, Stanly, and Mont-

gomery. From one to five days were spent in each county, working with the county agents among farmers on special agronomic problems of the farmers.

Demonstrations have been conducted mainly in seed selection, crop improvement, variety testing, fertilizer tests, use of lime for different crops, value of legumes in soil improvement, and others.

Many samples of soil sent in by farmers have been examined and reports supplied on the deficiencies of the soil and how to best treat them for the best and most profitable growth of particular crops.

Work With Sugar Plants

The great variation in climatic conditions necessary to the successful production of different sugar plants compels the inclusion of practically all parts of the state in the work. This condition also makes it necessary that the work in connection with each plant be carried out in a somewhat different way from that of the others.

Stimulation of greater production and better quality of products is the principal problem with all the sugar plants, but with the sugar maple the problem also includes the creation of a sentiment favorable to the preservation of the old trees and to the planting of young ones.

Visits to the individual farmer in his home have proved more effective, generally, than public meetings, although a considerable number of public meetings have been held on the subject of sorghum sirup and cane sirup. The plan has been for the sugar plant specialist to spend from two days to a week with a county agent and go with him to such farmers as have shown, or are likely to show an interest in these crops. The results secured in many cases have proven this to be a wise course to follow.

Many county agents have asked for the assistance of the sugar plant specialist, particularly in the matter of sorghum, but in some counties where sorghum possibilities are greatest as a money crop, it was found necessary to request the assistance of the county agent. In all cases the county agents gave hearty coöperation when once their attention had been called to the importance of the crops and of the work.

A number of articles have been prepared for the *Extension Farm News* on sugar plant growing, which were used largely by the press of the state. The results of our sorghum variety demonstration for 1919 were tabulated and published in Extension Circular No. 102. This publication has been extensively distributed as a result of a large number of requests from farmers of the state. In addition, special letters have been prepared and sent to owners of sugar-maple groves and to the press of the mountain counties with reference to sugar maples.

An unusually large number of letters have been written in answer to requests for information from farmers and others relative to one or more of the sugar plants. The great number of inquiries received shows the interest farmers of the state have in this work.

Sorghum—This crop is the most important of sugar plants of the state at the present time, as it is grown to some extent for sirup purposes in almost every section of North Carolina. Last year the value of the sirup produced in the state was $3,676,000, or about the same in value as the oat crop. InI addition the seed were worth many thousands of dollars, which would make the total value of the crop considerably greater than that of oats.

The possibilites for developing a valuable money crop in sorghum is exceptionally good, as the net profits from an acre would not be less than $110, with possibilities of a net profit as high as $225 per acre. The work with this crop for the past year has been carried out with the following objects in view: To show farmers the importance of planting seed of a pure variety, whose juice is rich in sugar, so as to secure the maximum yield of sirup, and also that the

variety should be suitable for the soil and climatic conditions of his locality; to secure a greater production by giving facts and figures to show the money value of the crop per acre; and to secure better equipment for working up the crop, thereby producing a better grade of sirup by more careful methods of manufacture.

Individual work along the above lines was carried on in about twenty-five counties of the state in coöperation with the county agents. The proper method of determining the finishing point of sirup was stressed and many sirup-makers are now using the thermometer for this purpose. Attention was also called to the importance of using sanitary vessels for the sirup and of proper methods of canning and caring for the finished product.

Variety demonstrations to determine more fully the best varieties to grow in different sections of the state were again put out by the following: Buncombe Farm; Charles Lutz, Newton; Central Station, Raleigh; Charles J. Heath, Ernul; Waccamaw Lumber Company, Bolton; and Thomas D. Hardin, Greensboro. The latter had to be abandoned, but from other plants much valuable data has been gathered which will later be reported in tabulated form.

At all of these places assistance was given in making the sirup and a number of sirup-makers came to witness the demonstrations, especially in testing the finishing point of the sirup with the thermometer. The use of the thermometer by sirup-makers is now being in quite general practice throughout the state and will bring a better and more uniform grade of product.

It is planned to continue the work with sorghum for next year along the same general lines as carried out this year.

Sugar Cane—This crop is grown in quantities sufficient to produce sirup for the home by many farmers in the southeastern part of the state. This area includes all of the counties of Brunswick, Columbus, New Hanover, and Pender; also the southern part of Onslow.

In this region sugar cane grows and matures as well as in states further south, and the sirup, when properly made, has as fine a flavor and rich color as is made elsewhere.

Efforts have been made to induce farmers to plant more extensively, with some success, but so far the sugar plant specialist has not been able to give this crop the attention its importance would seem to merit. From the nature of both soil and the climate there seems to be a splendid opportunity to build up a valuable cane-sirup industry in this part of the state, and more careful demonstrations should be made in the near future to determine the limits of these possibilities.

Sugar Beets—The work with this plant has been continued to determine the localities in which this crop may be profitably grown, either as a commercial crop or for feeding purposes. Seed was not so widely distributed last spring as in preceding years, but was given to selected farmers in sections of the state where previous results seemed to indicate there was more promise. Some fourteen or fifteen plats of from one-eighth to one-fourth of an acre were planted in Rowan, Forsyth, Henderson, Transylvania, Buncombe, Watauga, Jackson, and Swain counties. Beets from these plats will be tested for sugar content. At this time all the plats have not been checked, but what have been visited show a crop, so far as size of beets and tonnage per acre is concerned, above the average of that of the Middle West. The indications are for a high sugar content, but the analyses can be depended upon alone to determine this. Plans are already under way for more careful and thorough demonstrations next year in connection with the Hendersonville Board of Trade and with citizens of Jackson County, as well as with some of those elsewhere who grew beets this year.

Sugar Maple—Circular letters were sent out early in the year to all owners of sugar maple groves whose names we have listed, in which they were urged to preserve their trees and to produce sugar and sirup. Personal interviews were held during the year with a considerable number of owners of groves in which the advantage of preserving their trees and utilizing them for sugar and sirup-making purposes were set forth. Some gratifying results of this work have come to our notice in the greatly increased tendency to preserve groves intact in certain localities and in the greater production of maple sugar and sirup during the last season. More groves were operated and more sugar produced than at any period during a long series of years.

The time at the command of the sugar plant specialist and the slowness of travel in the best sugar maple communities has made it impossible to gather very reliable data on the amount produced, but it can safely be said that it was at least double that of any preceding year in the last thirty or more years. Unfortunately, almost all orchards were operated with old-type equipment and under old and wasteful methods. It is a hopeful sign, however, that at least two and possibly three or four orchards have been provided with modern equipment in full during the last two years. These, and particularly the one at Grandfather Orphanage, Banner Elk, will prove valuable as demonstrations of the better quality of sugar and sirup that can be secured from proper equipment.

Altogether the outlook for increased production of maple sugar and sirup and for the preservation of the trees is very encouraging. If continued attention is given to the matter and assistance and encouragement given the owners of groves, there will soon be such a sentiment for preserving them as will preclude such destruction as has been going on for some years past. Preservation of the groves will bring about a greatly increased production of sugar and sirup.

Publications

During the year the following extension publications on agronomy subjects have been prepared and published:

BULLETIN

1. Control of Cotton Anthracnose and Improvement of Cotton. Written in coöperation with the Division of Plant Pathology.

CIRCULARS

2. Sweet Sorghum Variety Demonstrations. No. 102.
3. Improved Seed Wheat for North Carolina. No. 106.
4. Community Cotton Improvement in North Carolina. No. 108.

In closing this report I wish to commend most heartily all those associated with me in the agronomy work for their earnestness and faithfulness to duty.

Yours very respectfully,

C. B. WILLIAMS,
Chief, Division of Agronomy.

REPORT OF THE DIVISION OF ANIMAL INDUSTRY

To the Director: Heretofore I have, in my annual report, usually reviewed in more or less detail the outstanding phases of our livestock work. This year, however. I am merely giving statements of projects. If you desire additional information it will be little trouble for me to place it in your hands as practically all of our work is summarized up to date.

Beef Cattle and Sheep

R. S. Curtis in Charge
Assisted by Earl Hostetler, F. T. Peden, George Evans

1. "Introducing Purebred Sheep."
   (27 males and 238 females were established throughout the state.)
2. "Sheep Shearing and Demonstration Schools."
   (54 such schools were held in coöperation with county agents with a total attendance of 1,003.)
3. "Sheep Schools for County Agents."
   (Plans are laid to inaugurate this as soon as funds are available.)
4. "Marketing Wool and Lambs."
   (In coöperation with Division of Markets, 15,000 pounds of wool were shipped to Elkin to be made into blankets. Evans graded it. The wool has netted the farmer from 50-55 cents a pound.)
5. "Dog Control Law."
   (Only a few counties are using the law. Some changes should be made in the law.)
6. "Miscellaneous Sheep Work."
   (Evans has done much miscellaneous work with the county agents. Under this head he visited 230 farmers and advised with them about sheep; attended 7 fairs with educational exhibits, etc.)
7. "The Value of Permanent Pastures."
   (This work is done entirely with county agents and is confined largely to the mountain counties where the Haywood experiments apply.)
8. "Herdsman's Short Schools."
   (The beef cattle and sheep schools were held together. See sheep schools for results.)
9. "Introducing Purebred Beef Cattle."
   (As a result of this effort the Hereford and Aberdeen-Angus breeders have each organized and held sales. Sloss also assisted individuals in purchasing cattle.)
10. "Marketing Beef Cattle."
    (In coöperation with Division of Markets, a large sale was held at Spruce Pine on September 23; 700 head were offered but all were not sold. Conditions interferred with plans but we feel that the coöperative plan outlined can be carried through successfully this fall.)

Poultry Clubs and Poultry Extension

Allen G. Oliver, in Charge

This work is really looked upon as a single project, Mr. Oliver devoting pratically all of his time to the young folks of North Carolina. He, of course, does all of his work through the county agent or woman agent as the local leader. The total poultry club enrollment this year is 3,200. In looking after this membership Mr. Oliver traveled 15,217 miles, gave 132 talks, and talked

to 13,413 people; made 608 personal visits, held 79 club meetings at schools, gave 428 poultry demonstrations of various kinds, and had his young people show at fairs 1,178 birds and 137 dozen of eggs, they winning almost a thousand dollars in prizes.

Swine Extension

W. W. SHAY IN CHARGE

1. "Pig Clubs."
   (The membership this year is 1,081. Shay has confined his club efforts this year largely to providing subject-matter material.)
2. "Introducing Better Breeding Animals."
   (101 purebred hogs were placed by Shay personally and 4 public sales held. The most of this sort of work is now done through the county agent as the local representative.)
3. "Swine Schools and Demonstrations."
   (This consists of butchering demonstrations, judging demonstrations, meat cutting demonstrations, pasture grazing demonstrations, etc.)
4. "Miscellaneous."
   (Much of Shay's time is taken up with calls which do not fit into program work, or writing letters (1,601), writing bulletins, making personal visits to farmers (90), making talks, etc.)

Dairy Extension

JOHN A. AREY IN CHARGE
ASSISTED BY F. R. FARNHAM, D. R. NOLAND, A. C. KIMREY, LEE COE, W. L. CLEVENGER, J. A. CONOVER

1. "Creamery Development."
   (The creameries have enjoyed a successful year, having made 23.4 per cent more butter than last year. We have encouraged no new institutions. Clevenger has devoted his time to working with the old ones.)
2. "Cheese Factory Development."
   (Even with some confusion prevailing as a result of low cheese prices and misinformation about cream stations, the 30 cheese factories have enjoyed an output of 481,676 pounds during the year—a substantial increase over last year. Mr. J. A. Conover is now doing production work around the factories—work that has long been needed. Two new factories during the year. Would have been several more if we had not discouraged them.)
3. "Register of Merit Work."
   (This work is all done under direction of Dairy Field Office. During May, for instance, 16 farmers, with 107 cows, were in this work, 22 cows during the month producing over 50 pounds of butter fat each.)
4. "Cow Testing Associations."
   (Two cow testing associations are now actively at work, one around Asheville and the other at Charlotte. About 300 cows are involved.)
5. "Dairy Coöperative Bull Associations."
   (There are now 9 such associations in the state, having a membership of 718 and owning 52 bulls.)
6. "Construction Work."
   (a) Dairy field men assisted in the construction of 62 silos.
   (b) Dairy field men assisted in the construction of 19 milk houses.
   (c) Dairy field men assisted in the construction of 3 dairy barns.

7. "Introducing Better Milk Animals and Family Cows."
   (During the year this office assisted farmers in bringing in 33 dairy bulls and 449 cows. This work appeals particularly to coastal section.)
8. "Home Butter Making."
   (This work is done by means of women agents, the agents themselves being trained by our dairy experts. This office loans the women agents churning outfits for demonstrations before their farm women.)
9. "Dairy Schools."
   (On account of the resignation of Reed and Brintnall this work suffered. Ten schools, however, were held by Kimrey and county agents, with an attendance of over 500.)

Some Tabulated Summaries

A general view of the activities of each office may be had from the following table:

Name of Office	*No. Meetings*	*No. Persons Attending*	*Letters Written During Year*
General Office (Gray)	5	920	1,250
Dairy Extension	150	7,496	3,000
Swine Extension	15	2,196	1,601
Poultry Extension	132	13,413	1,138
Beef Cattle and Sheep	82	1,503	6,667
Totals	384	25,528	13,656

The State Fair

For a number of years I have been watching the tendency and spirit of the State Fair at Raleigh. It has never, as far as I know, reflected the agricultural spirit and agricultural growth and development of the state. In fact, there seems to be very little, if any, serious attempt made to have it represent our real agricultural interests and developments. It is just about as far away from things agricultural as it can get. All of its efforts and thoughts seem to hinge around commercialism and mid-ways—two of them this year. This is unfortunate. Fairs are places where whole families go for outings. And when they do go I'm convinced they do not wish to be met with questionable and indecent amusements, gambling booths, and games of chance.

This year I made, the first morning, a rather careful personal survey of everything on the fair grounds. I do not claim that the following figures are absolutely correct, but they are near enough to the truth to eliminate the necessity of quibbling. Here are some of the facts I gathered:

1. Total space devoted to side shows, eating places, commercial exhibits, games of chance, palm readers, etc., space paid for, 157,110 square feet.
2. Total space devoted to educational exhibits other than agricultural, as Health Department, Good Roads, Geology, etc., space probably not paid for, 5,360 square feet.
3. Total space devoted to strictly agricultural exhibits, as live stock, Federal Government, counties, individuals, etc., 12,300 square feet.
4. Total number shows, trinket stands, games of chance, etc., along midway, not including eating places, 153.
5. Number of eating places, 95.
6. Commercial exhibits (space paid for) as machinery, autos, fertilizer companies, lights, business houses down town, etc., 91.

7. Palm readers, 22.
8. Games of chance, 71.

These facts show that the State Fair is far away from anywhere that educated agricultural workers stand for. So far, in fact, that many people feel that we cannot afford to have our good name associated with the fair any longer. If the authorities of the State Fair refuse to modify its present spirit and fail to bring it into line with things public agricultural workers can stand for and approve, my feeling is that we should seriously consider the advisability of allowing our name to be associated with the State Fair. State fairs can be maintained as high-class educational institutions with a proper admixture of educational features and wholesome entertainment and amusement. Our own should be lifted onto that high plane.

I cannot close the report without commending the good work and excellent spirit of the men and women connected with the Animal Industry Division.

Yours very truly,

DAN T. GRAY,
Chief, Animal Industry Division.

REPORT OF THE DIVISION OF ENTOMOLOGY

To the Director:—Our "extension" activities are conducted through and with the coöperation of the county farm agents so far as possible. They are informed in advance of visits of our extension workers when they go to the counties for planned public demonstration work. When meetings are desired the agents arrange them—and they frequently accompany our workers in their visits to individual farmers. They form an important link in our chain of work. They submit numerous questions and specimens to us, and our publications are distributed largely through them. Our workers attend many of the conferences of the agents, and many visits to our office are made by the agents. The agents inform us of insect outbreaks, locate fields for tests or demonstrations or call on us to visit their counties to help their people. I gladly acknowledge the help which the agents give to this Division, and I cherish the hope that the agents would testify if need be, to the coöperation which we give them. Our relations are wholly helpful and cordial in every way, so far as I have seen, heard, or experienced.

Extension Beekeeping

Mr. C. L. Sams has continued in this project with his usual interest and success. The present year has been above the average in honey production, and as this work proceeds a larger proportion of the product is offered in the standard packages and containers. At the same time that our beekeepers are coming more to meet the requirements of exacting markets, they are supplying the home market, which is perhaps the best of all, and in some respects less exacting. The beekeepers are learning the grades and classification of honeys. Many local meetings of beekeepers have been held with instructions and demonstrations in re-queening, transferring, building up in preparation for honey flow, winter preparation, etc. Many of our beekeepers are improving the stock of their bees, as well as their equipment for operations. A number of the county agents have shown special interest in this work, and there are a number of county bee clubs. Among the counties where much of this work has been done may be mentioned Wake, Pitt, Beaufort, Columbus, Pender, Cabarrus, Buncombe, and Madison.

On invitation of Professor Metcalf, of the Agricultural College, Mr. Sams coöperated in arranging for and conducting a short-course for beekeepers which included a demonstration in transferring before the State Farmers' Convention. He likewise coöperated in securing exhibits and managing the very creditable beekeeping display at the State Fair in October. The State Beekeepers Association, now apparently on good permanent footing, held its fourth annual meeting at Greensboro in January and preparations are now being made for the fifth meeting to be held at Wilmington.

County agents are well informed as to this work.

Extension in General Entomology

Mr. Smith resigned this work in early summer and the vacancy was filled by the appointment of Mr. W. B. Mabee, who has prosecuted the work with entire satisfaction. Many visits have been made to county agents, farmers, and attendance at called meetings and demonstrations. Trees in bearing orchards have been carefully sprayed, and the effects in control of insects noted—this in coöperation with Divisions of Horticulture and Pathology and with county agents.

During the outbreaks of Cotton Leaf-louse and Fall Army-worm Mr. Mabee was occupied in giving correct information to farmers and county agents. He also assisted Mr. Haber in preparing the insect exhibit for the State Fair,

and at this writing is working in the territory recently invaded by Boll-weevil, and in disseminating information about it. He prepared a letter-folder circular on this subject which is being distributed freely.

As time goes on other lines will be emphasized, such as potato spraying, cabbage dusting, safe dates for planting wheat, control of corn stalk-borer, and other matters in which we have established profitable practices or in which such practices are already well known in the entomological profession.

It seems unnecessary to designate all the counties which have been visited by Mr. Mabee in his work, some of them are: Avery, Mitchell, Henderson, Buncombe, Randolph, Anson, Union, Wake, Pender, Hertford, Franklin, Onslow, Carteret, and Scotland.

Publications

The following have been issued during the year, based on our work in Investigation and Extension.

Extension Circular No. 103. "Spraying Irish Potatoes," by R. W. LEIBY.
An amplification of No. 48 on same subject, issued during the war emergency, and condenses results of seven years' experiments, most of which are detailed in Bulletin 254, N. C. Department of Agriculture, March, 1919.

Extension Circular No. 104. "The Cotton Boll-weevil," by FRANKLIN SHERMAN.
Gives account of first invasion of North Carolina by this insect, October, 1919. Gives probabilities as to spread, summarizes life-history and control measures, including reference to recent poisoning methods developed by U. S. Department of Agriculture.

Extension Circular No. 105. "Green Clover Worm as a Pest of Soybeans," by FRANKLIN SHERMAN and R. W. LEIBY.
Gives account of investigations by authors in 1919, with description of remedies successfully used.

"Are You Afraid of Boll-weevil?" Letter-folder by W. B. MABEE, Assistant in Extension Entomology.
Designed for more liberal distribution than usual circulars, as at fairs, meetings, field work, etc. Briefly outlines the requisite steps for cotton-growers in view of weevil-infestation.

"Notes on Mosquito Fauna of North Carolina," by FRANKLIN SHERMAN.
General resumé of mosquito problem, and notes on 32 species ascertained to inhabit the state. Published in Journal Elisha Mitchell Scientific Society (Chapel Hill, N. C.), September, 1920. Seven pages. Outcome of this phase of insect survey project.

Acknowledgments

As in previous reports I wish to gratefully acknowledge the encouragement, counsel, and assistance always rendered by yourself, the support of the Board of Control, and the loyal service of every person employed in the division.

Very respectfully submitted,

FRANKLIN SHERMAN,
Chief in Entomology.

REPORT OF THE DIVISION OF HORTICULTURE

To the Director:—Extension work in horticulture has continued to increase in value and usefulness to the horticultural interests of the state. The demand for horticultural assistance has developed to such an extent that it has necessitated reorganizing horticultural extension work on a definite project basis so that the activities of the extension workers can be directed where they are most needed. The work is planned to reach groups rather than individuals. This plan has brought about closer working arrangements between the county agents and extension workers. The division has relied on the county agents to work up county and community groups for the different projects.

To best serve the horticultural interests of the state the extension and investigational activities of the division are very closely coördinated. The information collected by the investigational workers of the division is made available to the fruit and trucking interests through the work and campaigns of the extension service. The extension workers employ freely the *Extension Farm News*, the daily press, and circular letters to aid in their campaigns and in the dissemination of information. The work of the division is conducted largely through the county agents, the home demonstration agents, fairs, fruit shows, boards of trade, and other local agencies.

Very effective results were secured this year. A total of 112 meetings in 38 counties were held with a total attendance of 5,780. Demonstration work in horticulture is an important factor in the development of horticultural industries in the state as it informs the growers of the most approved methods in use and encourages the adoption of the most up-to-date practices in fruit and vegetable production.

The principal problems with reference to horticultural extension are:

1. Better pruning and spraying in commercial orchards.
2. Home orchards for farms.
3. Home gardens for both rural and urban families.
4. A better distribution of the sweet potato crop through the use of storage houses.
5. The need of closer association among growers and the development of the organization in handling their business rather than the development of the individual system.

Active work was done on the following projects during the year:

Orchard Demonstration Work

(C. D. Matthews and Paul T. Schooley)

For the most part the work done under this project consists in general demonstrations in pruning and spraying, given in coöperation with the county agents. The demonstrations are conducted in young orchards, in mature orchards, and in old orchards, where renovation is needed. Considerable attention has been given to this type of work because of its importance, the limiting factors of apple and peach production in the state being the ones of pruning and spraying. It is the duty of the county agent to assist in the selection of the orchards, to provide the spray pumps and all spray materials, to advertise the date and nature of the demonstration. Twenty-seven meetings of this type were held during the year in 11 counties, with a total attendance of 565.

Orchard Plot Demonstrations in Pruning and Spraying

(C. D. MATTHEWS AND PAUL T. SCHOOLEY)

To conduct this project commercial orchards were selected in five nearly contiguous apple-producing counties in which to locate plots to demonstrate pruning and spraying practices. The extension specialist and the county agent coöperated in the selection of the orchards. In choosing the orchards, due consideration was given to location, accessibility, and an attempt was made to secure orchards typical of others in the section in regard to variety, age, and other factors.

A project sheet, agreement, and memorandum was drawn up between the orchard owner, the county agent and the Division of Horticulture. In this material, the object and plan, and the duties of each coöperator were enumerated in detail.

The plan of the project calls for three different plots:

Plot 1—Both pruned and sprayed, consisting of from 5 to 15 trees.
Plot 2—Sprayed but not pruned, consisting of from 5 to 15 trees.
Plot 3—Check plot, neither pruned nor sprayed, consisting of from 2 to 4 trees.

The county agent sees that all spraying equipment and materials are provided in good condition. The agent advertises the date and nature of each demonstration to be given.

From 6 to 8 demonstrations are given at each series of plots during each year and are designated as follows:

1. Pruning and dormant spray demonstration.
2. Cluster bud spray demonstration.
3. Calyx spray demonstration.
4. Blotch spray demonstration.
5. Bitter rot spray demonstration.
6. Bitter rot spray demonstration.
7. Bitter rot spray demonstration.
8. Round up demonstration to show results of treatments and to collect the data.

The demonstrations are planned to extend over a period of three years duration in each orchard selected, or until some of the lessons of the demonstrations become the habits of the section.

A systematic record book has been designed by the use of which the results of the demonstrations can be most effectively secured. This book provides for the recording of the cost of each operation together with recording of productive records and the net proceeds of each plot. Such a record shows the exact value to the grower of each operation.

Due to the fact that several of the orchards were too young for a crop this year, the number of meetings was held to a minimum. Fourteen meetings were held, with a total attendance of 412.

Demonstration Home Orchards

(C. D. MATTHEWS AND PAUL T. SCHOOLEY)

It has been the plan of this work to plant one or more one-acre demonstration home orchard in each county to encourage the planting of home orchards on the farm.

The demonstration orchards have been located in coöperation with the county agents and under their supervision. The plantings have been composed of varieties found by the Division of Horticulture to be most desirable for the different sections of the state.

During the last three years nearly 150 of these orchards have been planted. A majority of the orchards have developed very satisfactorily, while a few have been decidedly unsatisfactory. The degree of success of the orchards has been in proportion to the amount of attention given them in almost every case.

These orchards are to be used by the extension workers of the Division of Horticulture for demonstration purposes, so far as it may be possible.

Sweet Potato Storage

(C. D. MATTHEWS, PAUL T. SCHOOLEY, AND L. H. NELSON)

The sweet potato storage house construction campaign was continued during the year in a very active manner.

In coöperation with the county agents, boards of trade, and other organizations, meetings were held to stimulate interest in storage house construction, as well as to supply information regarding all phases of the subject. Demonstrations in harvesting and handling, construction of the house and its operation were given. The feature of the sweet potato work this year was the special sweet potato exhibit car operated by the division in coöperation with the Seaboard Air Line Railroad, the Atlantic Coast Line, the Norfolk Southern, and the Southern Railway. The railroads furnished the express car in which the exhibit was housed and transported it from place to place. The main feature of the exhibit car was a model sweet potato storage house built on the exact scale of the government plan and which for purposes of demonstration could be taken to pieces and reconstructed, section by section, to illustrate the important points in the construction of a storage house.

Other material in the exhibit furnished information regarding storage and storage house construction, disease and disease control, sweet potato grades and marketing.

The exhibit was in charge of the Extension Horticulturist who had associated with him representatives of the Division of Plant Pathology and Markets, the railroads, district demonstration agents, and county agents. The car was attached to regular trains and was dropped at the various stations for a period of several hours, where the exhibit was open to the public and the advice of the experts in charge was available. The trip of the exhibit car extended over a period of three weeks and was very successful. The car traveled 1,100 miles, visited 22 counties, stopped at 30 towns with a total attendance of 2,825.

The exact number of houses constructed this year has not been determined as yet. Nearly 400 plans of houses of capacities from 500 bushels to 15,500 bushels were distributed during the year.

State Fair Work

In past years considerable attention has been given to horticultural work at the State Fair. The division did not take part in the State Fair this year because of its duties in connection with the Western North Carolina Apple Show.

The Western North Carolina Apple Show

One feature of the division's work this year was the Western North Carolina Apple Show, held in Asheville October 27, 28, and 29. This fruit show was conducted under the auspices of the Asheville Board of Trade and the Division of Horticulture. The fruit growers of Western North Carolina, the boards of trade of the towns of that section, the North Carolina Agricultural Extension Service through its county agents in the western part of the state, and the North Carolina Department of Agriculture coöperated in making the venture a success.

The purpose of the Western North Carolina Apple Show was to stimulate a greater production of high quality apples in the state. An increased tonnage of high quality apples is greatly desired and would be of immense advantage to the industry in that a superior marketing system could be devised. It is believed that the apple show will prove instrumental in stimulating increased tonnage in two ways.

First, by aiding the fruit growers of Western North Carolina to produce more and better apples, and to handle and market them in such a manner that the value of the crop will be greatly increased.

Second, by impressing the general public with the fact that North Carolina is growing apples that are not excelled by any other section, for size, color, and quality; and by focusing public attention on the wonderful natural and economic advantages that Western North Carolina enjoys for the production of apples. Apple production in Western North Carolina has not kept pace with the enormous general agricultural development that has taken place in the state during the last decade. This condition is not the result of the operation of any disadvantage of Western North Carolina as an apple-producing territory, but is due mainly to the fact that the value of this vast section has not been generally realized and it has remained relatively undeveloped.

Western North Carolina possesses both natural and economic advantages as being a land of opportunity for apple growing. Among the natural advantages those of soil, climate, topography, altitude, and rainfall are important. The section possesses valuable economic points of superiority in her cheap lands and accessibility to markets.

The Western North Carolina Apple Show was primarily a fruit growers' enterprise. Every feature was worked out to make it a valuable educational exhibition for fruit growers and those interested in the development of the apple industry. No admission was charged. The show was held in two large tents. One tent housed the competitive fruit exhibits, of which there were over three car-loads. The premium list of $1,000 in cash prizes, together with the prizes donated by commercial companies, brought out a field of 89 exhibitors, which made competition very close in most classes.

The second tent was devoted to the educational exhibits of the North Carolina Agricultural Extension Service and to exhibits of commercial orchard equipment companies. Different types of power sprayers, dusters, fruit sizers, orchard implements and other equipment were displayed and demonstrated. Some very extensive county booths were in this tent.

In connection with the show a very interesting and instructive program, discussing horticultural problems was conducted. We were particularly fortunate in having speakers of national horticultural reputation on the program. While the attendance at the meetings was small, much interest was exhibited by those present.

For weeks previous to the show an extensive publicity campaign was conducted throughout the western part of the state with the result that the show was well attended. It was estimated that over 25,000 people viewed the exhibits during the week. There was general surprise that Western North Carolina could produce such handsome fruit. It was the concensus of opinion of the visiting horticultural authorities from other states that they had never seen fruit in any other section equalling in size, color, and flavor the apples on exhibition.

The Western North Carolina Apple Show can be considered to have been very successful, for it led to the formation of the North Carolina Horticultural Society, an organization that has long been needed, and one that will play an important part in the development of the fruit industries of the state. Mr. H. P. Corwith, Saluda, and Mr. John Ewbanks, Hendersonville, were elected president and secretary respectively.

A second important result of the show consisted in the development of the realization of the opportunity for an apple industry and its value to the western part of the state by business men, bankers, and other agencies in the section to such an extent that their active assistance can be enlisted in developing the industry.

The Pathe Company took moving pictures of the show for their Pathe Weekly, a film that is shown weekly throughout the country.

General Remarks Regarding the Organization of Extension Work in Horticulture

The success of extension work in a state depends upon determining the real problems of horticulture, the soundness of principle on which the work is conducted, and the degree of efficiency developed in presenting the demonstrations and subject-matter to the people. The final measure of success of any demonstration is the extent to which the practice demonstrated is actually adopted in the community.

In the organization of demonstration work we have found that the definite project plan and program basis to be the most satisfactory system. At the county agent conferences for the different districts a diagramatic directory of specialists and projects of the division was presented to the agents. At these conferences the scope of the different projects were explained in detail as was the manner of conducting them. At the close of the conference the agents submitted their program for horticultural work to the specialists and any readjustments necessary were made.

The general tendency in the past has been to take care of miscellaneous requests for demonstrations that have been made by county agents and others. While some good has come from this scattering type of work, effectiveness has been weakened by lack of concentration and organization. Although it will always be necessary to meet some requests for general demonstrations, we are anxious to concentrate and confine our efforts to definite organized work, and are trying to discourage the isolated type of meeting or demonstration.

We have found in our work that a well-executed and explained demonstration is of far greater value that a lecture. The subject matter taught by the demonstration should be slightly in advance of the time that it is to be used. For example, pruning demonstrations should be given in late fall or early winter when the growers attending will have an opportunity to practice what they have learned. It is important that there be a close understanding between all men of the department and unity of ideas regarding subject matter. Extension work may be rendered almost valueless in a given section by two men from the same division advocating widely different practices or methods. Unity of teaching can be secured by frequent informal conferences to consider subject matter and departmental recommendations regarding it.

Respectfully submitted,

C. D. MATTHEWS,
Acting Chief, Division of Horticulture.

REPORT OF DIVISION OF MARKETS AND RURAL ORGANIZATION

To the Director:—This report is for the year ending December 1, 1920, and covers extension service work of the Division of Markets and Rural Organization, conducted jointly or separately by the North Carolina Department of Agriculture and the North Carolina State College of Agriculture and Engineering in coöperation with the United States Department of Agriculture under the agreements and plans entered into by these institutions for the conduct of all agricultural work of this kind in the state.

Cotton Warehouse System

The North Carolina Cotton Warehouse System is in full operation. The first lease and application for license was received September 25, from the Sampson Cotton Storage Warehouse, at Clinton. Eighteen applications in all have been received, as follows:

Clinton, 2,000 bales; Creedmoor, 300; Fayetteville, 3,000; Swann Station, 450; Lillington, 1,000; Kelford, 500; Moncure, 600; Monroe, 5,000; Selma, 600; Morven, 1,500; Lumberton, 3,000; Fairmont, 1,000; Lilesville, 600; Chadbourn, 600; Polkton, 600; Waxhaw, 300; Sanford, 2,000; Wadesboro, 350.

Total, 18 warehouses; capacity, 23,400 bales.

Of these eighteen twelve have been licensed and are in operation as follows: Clinton, Creedmoor, Fayetteville, Kelford, Moncure, Monroe, Selma, Lumberton, Fairmont, Lilesville, Plokton, and Waxhaw. The rest of those on the list from whom applications have been received will be licensed soon, while applications are being received nearly every day. It seems probable that we will have at least twenty-five houses this season, and possibly many more.

The total cotton received for storage to date, November 22, is 3,521 bales.

Promotion and Organization of Warehouses

Some work in promotion and organization has been done by nearly every one connected with our cotton work. T. B. Parker, as Field Organizer, has visited most of the cotton growing counties of the state during the year, finding during the early part of the year that the relatively high price of cotton and of building materials was dampening the ardor of many of those interested in cotton warehouses. However, considerable interest was shown at Kenly, Creedmoor, Swann Station, Oriental, Chadbourn, Tabor, Fair Bluff, Raeford, Fairmont, Jacksonville, Belgrade, Gates, and Clarkton. New warehouses were being considered at Spring Hope, Whitakers, Pittsboro, Moncure, Whiteville, Greenville, Candor, Troy, McFarland, and Sanford, while new houses have been built at Clinton, Monroe, and Smithfield. Considerable interest was shown at Elizabeth City, Hertford, Fremont, Goldsboro, Mount Olive, and Raleigh.

Assistance in the organization of warehouse companies and the extension of general engineering service has been applied by J. M. Workman, jointly employed by this department and the United States Department of Agriculture and located in Raleigh.

The work has consisted in correspondence with those interested in securing warehouse service, and in visiting those locations as fast as local interest developed. Suggestions have been given for organizing companies, suggested forms of by-laws and constitutions have been supplied, meetings addressed and finally complete working plans have been furnished in coöperation with local architects and questions of insurance have been handled with insurance rating boards.

Visits have been made to the following places for the purpose of holding conferences, addressing meetings, and advising in regard to construction: Wilson, Hertford, Fayetteville, Rocky Mount, Rowland, Elizabeth City, Greenville, Charlotte, Smithfield, Jackson, Moncure, Farmville, Wadesboro, Parkton, Raleigh, Lilesville, Polkton, Seaboard, Rich Square, Selma, Clinton, Monroe.

Of these places plans or layouts have been prepared for warehouses at Hertford, Raleigh, Rowland, Greenville, Smithfield, Farmville, Wadesboro, Clinton, and Monroe. Companies at other places have been unsuccessful in raising sufficient funds, have decided to defer building operations, or are still making efforts to raise the necessary stock subscriptions. A few small warehouses have been erected at other places, as for example, Moncure and Polkton.

Preliminary assistance through correspondence has been given to individuals at the following places: Candor, Gliden, Shelby, Maxton, Aulander, Kelford, Hamlet, Sanford, and Kings Mountain.

Inspection and Operation of Warehouses

The inspection of warehouses and the general supervision of their operations has been under the general direction of J. P. Brown. He has inspected all the houses that have applied for admission to the State System and sent in reports and applications for admission into the Federal System under the United States Warehouse Act, besides rendering valuable service in getting the state system under way.

Classing and Grading

The classing and grading under the supervision of P. H. Hart, while not strictly a part of the warehouse system, is closely connected with it. All the cotton going into storage in the state warehouses has been classed and graded by our state graders, except that at Fayetteville, Lumberton, and Fairmont. At these places special graders have been appointed.

Cotton grading and marketing offices were established at the following places for the cotton season of 1919 and 1920: Lumberton, Clinton, Tarboro, Fayetteville, and Raleigh, for the purpose of serving the people of Edgecombe, Robeson, Sampson, Duplin, and Cumberland counties. The Raleigh office served no particular county, but offered its services to all cotton growing counties, except the above named.

The Raleigh office also offered its services to the cotton mills of the state. The work during this season was conducted along the same lines as heretofore.

Arrangements were made with all the ginners in the counties named, to send samples of each bale ginned by them, provided it was agreeable to the owner of the bale, to the grading office situated in their respective counties. The samples were identified by numbers corresponding to those upon the bales. Supplies for forwarding the samples were furnished the ginner free. These consisted of tags, with coupons attached, for each bale of cotton, paper wrappers for each sample, and containers for mailing samples, with franked mailing tag for each container. The ginner is paid two and one-half cents for each sample sent in. The owner's name and address is placed on coupon inside sample. Upon receipt of the sample at the grading office it is immediately graded, and grade certificate showing grade and staple is mailed the owner.

In order for a county to obtain the services of a grader the county commissioners appropriated the sum of $250 for this season. This money was used in defraying local office expenses and paying ginners of that county for sending in samples.

The Edgecombe County office graded 6,442 bales; Sampson and Duplin counties office, both counties being served from one office, located in Clinton, 6,334 bales; Robeson County, 3,935; Cumberland County, 1,743; Raleigh office, for producers 1,139, and for cotton mills 3,306. Total amount of all offices, 23,339. This does not include the total amount graded for the full cotton season, only giving the amount graded since December 1, 1919.

The following offices were established for the cotton season of 1920 and 1921: New Bern, Clinton, Tarboro, Smithfield, Wadesboro, and Raleigh. The work is to be conducted as it has in the past. This report covers only three months of this cotton season, September, October, and November. The New Bern office has graded 1,248 bales, Tarboro office 5,258 bales, Monroe office 3,744 bales, Smithfield office 4,625 bales, Wadesboro 5,359 bales, Clinton office 2,598 bales, Raleigh office, producers 1,210 bales; cotton mills 1,090, total 2,300 bales.

The Clinton, Monroe, and New Bern offices were late in getting established, which accounts for the small amount graded at these offices so far.

LIVESTOCK

Eggs and Poultry

Investigations and observations made at previous times show that there is a decided need for a more remunerative plan of marketing eggs and poultry. This is more especially true in the Piedmont section and the western section of the state that are more distant from some of the larger cities. In the eastern section of the state large quantities of both eggs and poultry are shipped to the Norfolk market by farmers themselves. Consequently they have a fairly good market. However, if they would produce a higher quality product they could well afford to ship further north, where their produce, especially eggs, would command a higher price.

In the Piedmont and mountain sections practically all of the poultry and eggs are sold locally to dealers, or to produce wagons in some localities. As is to be expected when sold in this way, farmers do not get what they should for their products. It is known that some of the produce dealers in that section are making very handsome profits. There is a decided need for poultry and egg marketing circles in that section.

Cattle

During the fall of 1919 a fairly complete list of the feeder and stocker cattle for sale in the western part of the state was compiled and distributed among cattle feeders, butchers, county agents, and others interested parties, for the purpose of assisting in the movement of these cattle. A considerable number of cars were placed in this way. However, because of the roughness of the country it is almost impractical for cattle feeders from eastern counties to go to the cattle growers in the mountain sections for their cattle, and consequently in the past most of them have been buying through dealers.

In an attempt to remedy this situation a cattlemen's association, composed of the growers of feeder and stocker cattle in Avery, Mitchell, and Yancey counties, was formed early this season and plans were made for holding a cooperative sale of feeder and stocker cattle at Spruce Pine on September 23d. At this sale cattle from three counties were assembled and sold at private sale. About 700 cattle were included in this sale.

Some interest is being manifested in the coöperative shipment of cattle and some of this is being done, but only in a limited way. It is quite probable that there will be a gradual increase in the number of cattle sold in this way, when

they are in market condition. It now seems, however, that the sales plan above outlined is the most practical plan of selling feeder and stocker cattle, as no regular feeder and stocker cattle market is available.

Considerable personal assistance was given in the sale of fat cattle during the spring of 1920. As a rule this class of cattle has been going largely to northern markets, but this year a surprisingly large per cent of them have been bought by butchers in the state. This is a very good indication that there is a growing demand for the better grades of beef. In many instances the prices obtained for these fed steers have been from ½ to 1½ cents per pound above northern markets, freight and "drift" considered. However, in spite of these prices, most cattle feeders lost money on feeding last year.

Hogs

Coöperative hog shipping work was instituted in a number of counties, making a total of eleven counties in which this work is being carried on. There is really no surplus of hogs in the state, although local markets will frequently force local prices down during the height of the hog marketing season, unless arrangements are made among farmers to market their hogs coöperatively. A number of definite examples have been seen of the value of coöperative marketing in stimulating local markets. In other instances local prices have advanced from 1 to 2 cents per pound where coöperative marketing has been submitted to farmers of a county, even though no shipments were actually made.

Another value of coöperative shipping is that it causes farmers to see that local markets do not have to be depended upon and in this way stimulates production.

Fortunately for farmers in the eastern counties of the state most of their local markets, and some of their larger markets to which they shipped dressed hogs by express, do not discriminate against soft hogs, so in that way they frequently get more for them than if shipped to the Richmond and Baltimore markets. About 95 per cent of the hogs raised in the eastern part of the state are soft, being fattened on either soybeans or peanuts. Practically all local markets west of Raleigh discriminate against soft hogs. In fact it is almost impossible to sell them in that section of the state. Markets in that section of the state also discriminate very strongly against the Duroc-Jersey hogs, claiming it produces too much lard, which they cannot use profitably. Not infrequently will they pay from 1 to 3 cents per pound more for Berkshire or Poland China hogs. In some instances this discrimination is justified on the fresh meat market, as there are a large number of short chunky Duroc hogs in the locality referred to. However, the more growthy type is rapidly growing in favor among the farmers.

Coöperative hog shipments are carried on largely through county agents as there is hardly enough surplus hogs in a county to justify a shipping association. County agents have taken considerable interest in this work, and if there was any considerable surplus of fat hogs there seems to be no doubt but that it would very readily be taken up through coöperative marketing.

Lambs

The coöperative lamb marketing work instituted in six counties of the state during the summer of 1919 was the first time work of that sort had been undertaken. The results were, on the whole, very satisfactory. Only one additional county made a shipment this summer. Most of the lamb crop goes to market after July 1st. Baltimore, Philadelphia, and Jersey City are the

three markets patronized. As yet Richmond handles only a limited number of lambs. While all shipments go to one of the three markets mentioned, this makes a rather long haul from some of the western counties in the state, and consequently a nearer market would be greatly appreciated by sheep men and dealers. During the past year there has been a marked increase in sentiment favoring coöperative marketing of lambs and it seems quite probable that there will be a steady increase in the number of sheep and lambs sold that way.

Wool

In the summer of 1920 plans were made for holding three district coöperative wool sales in the state. One was to be at Asheville, in the mountain section, another at Greensboro, in the Piedmont section, and a third at Washington, in the coastal section, thus having them so located that wool from all over the state could easily be assembled at one of the three points.

Circular letters were mailed out to approximately 4,000 sheep growers in the state, calling attention to these sales, and inviting them to list their wool for sale. Sheep growers from a large per cent of the counties listed wool. The sales were to have been held the latter part of August and the forepart of September.

Because of the demoralized condition of the wool market, arrangements were made with one of the larger woolen mills in the state, that, in case a satisfactory bid was not received for the wool in the sales, they were to take the wool and make it up into blankets at a minimum charge and return the blankets to the original consignors of the wool.

Because the wool market failed to improve the sales were called off and instructions were sent the wool growers for consigning their wool to Elkin to be manufactured into blankets. A considerable part of the wool holdings were thus converted into woolen cloth, yarns, and blankets, and returned to the consignors to dispose of as they saw fit. Few of them have any surplus for sale. The cost of manufacturing a pair of double blankets, 72 x 84 inches, was $5.00 and the average amount of unwashed wool required was approximately twelve pounds. Depending upon the quality of the wool, three grades of blankets, ranging in wholesale value from $12.00 to $16.25, could be manufactured. The bulk of North Carolina wool made the medium grade blanket worth $14.25 at wholesale.

This method of disposing of the wool was very satisfactory, except, perhaps, to a few of the larger sheep growers who are preparing to hold their wool in anticipation of a better market later. A number of Missouri farmers were permitted to consign wool to the Elkin mill on the same plan.

Credit Unions

The credit union work has been in charge of J. M. Henley since July 1st. He has shown a fine grasp of his field, and much work is expected of him in the future.

There are at the present thirty-three credit unions incorporated in the state. Sixteen of these are organized among white farmers and seventeen among colored farmers. They are organized in seventeen counties in various parts of the state, from New Hanover to Madison County, so they touch the different types of farmers in the state. Most of the colored credit unions operate in the cotton and tobacco growing sections. They do good work in getting their members out from under the influence of the time merchant. These credit unions accept the member's notes for the amount of their orders through the credit union purchasing agent, deposit the notes with the bank as collateral and borrow enough money to make the cash, wholesale purchase. The liberal

terms of the banker makes this possible. Following is a table showing some of the savings made for the members of the Wendell Credit Union through coöperative purchases:

	Cost to Members.	*Local Retail Cash Price.*
10 tubs of lard	$ .25	$ .27½
1 barrel sugar	.17½	.20
16 barrels flour	13.00	14.25
1 ton feed	55.00	60.00
25 barrels flour	12.25	14.25
10 tubs of lard	.26½	.30
200 pounds sugar	.22	.27½
47 tons fertilizer	47.50	55.00
8 tons top dresser	74.45	90.00
20 bushels oats	.70	.90
5 barrels flour	13.25	15.25
1 barrel sugar	.27½	.32½

By starting this way with coöperative purchasing these colored farmers are learning the lesson of coöperation and are preparing themselves for coöperative efforts in the various phases of their business.

The credit unions organized by the white farmers take less of the form of a coöperative purchasing society and more of the real coöperative bank. They encourage deposits—some are able to create enough capital to meet their needs—and make cash loans to their members. In some communities the credit union is proving of inestimable value, not only by meeting the credit needs of the farmer, but by creating community interest and thereby aiding the farmers for getting together in coöperative enterprises. Following is a table showing the purposes of the loans and the savings made by members of the Carmel Credit Union:

LOANS MADE BY CARMEL CREDIT UNION, JANUARY 1 TO JULY 1, 1920

	Cash.	*Time Price and Interest.*	*Saving.*
For fertilizer	$3,000.00	$3,600.00	$600.00
For feed and food	875.00	962.00	78.50
To hold cotton	500.00	600.00	100.00
Milk truck	350.00	385.00	35.00
For cows	300.00	330.00	30.00
For labor	300.00	300.00	.....
Farm implements	200.00	220.00	20.00
Hospital and Col. acct.	210.00	210.00	.....
Credit Unions stock	25.00	25.00	.....
	$5,750.00	$6,632.00	$863.50

Time of loans, 50 days to 12 months; No. of borrowers, 25; average loan, $230; saving to each borrower, average, $34.90.

Although the growth of the credit unions during the past year has not been rapid they have been steadily gaining, as shown by the following figures taken from the financial statements of September 30, 1919, and September 30, 1920:

Date.	*No. Members.*	*Deposits.*	*Loans.*	*Total Resources.*
September 30, 1919	1,008	$28,093.42	$41,740.94	$53,437.07
September 30, 1920	1,387	52,343.81	86,333.44	102,103.12

There are two factors which somewhat limit the growth of credit union work in this state. They are (1) the lack of trained and efficient leaders, and (2) the lack of business methods and education as to the advantages of credit among the farmers in general.

Wherever a credit union has made a signal success it has been guided by an enthusiastic community leader, and wherever a credit union is organized and does not make good progress, an investigation reveals the fact that there is no leader with the ability to push the undertaking and make it a success. The credit union undertakes to capitalize character, therefore, the membership must be stable and the members know and have confidence in each other before they can work together. Real, stable credit union growth, then, must come from this permanent, home-owning population, its education in sound business methods and the development of community leaders with energy and ability to direct coöperative enterprises.

PERISHABLES

The work in marketing perishables is under the supervision of Gorrell Shumaker, and assistant. This department has been very active during the year and has done very creditable work.

Cowpeas and Soybeans

During the early months of the past winter a survey of the supply of soybeans and cowpeas available for seed purposes disclosed a serious shortage. Growers were warned of this fact and those who had not sold hastily were rewarded with an increase in price of more than two dollars per bushel. The growers were permitted to advertise their seed in the Farmers' Market Bulletin, provided they were willing to guarantee purity of variety and germination of quality and the surplus soon found ready sale. Many of those who sold early did so because of the lack of storage facilities. Coöperative warehouses would enable these growers to hold their seed in good order for the higher prices prevailing just before the spring seeding. The warehouses would also permit the use of the grading and cleaning machinery, resulting in the sale of better seed as well as an increase in the price to growers.

Federal reports indicate that the 1920 seed crop just harvested is no heavier than the 1919 crop, even though it was expected that the high prices for seed last year would induce growers to cut down acreage used for forage and to increase the acreage allowed to mature for the seed crop. From these facts it would seem that another survey similar to the one made last season, should be of value to the North Carolina growers.

The idea would be to locate surplus stock yet in the hands of the growers in an effort to determine the approximate percentage sold to dealers in seeds at harvest time.

Sweet Potatoes

The 1919 crop of sweet potatoes forced many North Carolina growers to find a market outside of the state for their surplus stock. Before this time Catawba county was practically the only section to ship to the more distant markets. It is doubtful if even the 1919 crop was really in excess of the state's needs, the problem being one of distribution. The growing popularity of the storage houses in certain sections has made possible better keeping conditions, and these neighborhoods may possibly be over supplied with market stock, but there are so many other sections where the most of the sweets rot in the bank storages. It is believed, therefore, that no great quantities need be shipped north were facilities for local distribution given better attention.

The 1920 crop for this state is reported to be heavy and under these circumstances we may be forced to cater to the northern markets. In this case our growers have the advantage of the experiment of the more southern states last season, for they shipped considerable quantities of the southern sweets into the northern markets, thus familiarizing the trade there with the most delicious qualities of this commodity, and thereby paving the way for a greater demand this season.

A study of several cars shipped from this state to northern markets during the past season proves conclusively that it is not safe to ship bank-stored sweets any great distance. They rot very badly, even in short hauls, if the cars are not well ventilated. Studies of storage houses have indicated that good marketable stock will keep in excellent condition, provided that principles under which storages operate are not overlooked. Failure to comply with storage house rules caused a loss of about thirty per cent in one of the larger storages in North Carolina during the past season.

In order that shipments to northern markets from this state might be uniform in quality and condition the revised sweet potato grades as recommended by the Federal Bureau of Markets were adopted as the legal standard for North Carolina. Southern sweet potato growers have a good opportunity on northern markets provided they ship a good quality article at all times.

Sweet Potato Special Demonstration Car

This division coöperated with the Division of Horticulture and the Plant Pathologist in equipping a special sweet potato demonstration exhibit car. This car contained a miniature model sweet potato storage house, working plans and specifications for various sizes of this house, pictures and charts illustrating approved methods of growing, harvesting and storing charts and slides illustrating diseases and their control, together with a display of the standard market grades, and both faulty and approved types of packages. This car was on its tour three weeks and in that time was exhibited at 31 points in the leading sweet potato producing sections. Over three thousand people visited the car and an enormous quantity of free literature was distributed. Four railroad companies coöperated in moving this car from point to point, a total distance of over eleven hundred miles. Judging from the greatly increased number of calls for storage plans, as well as the intense interest displayed in the exhibits, it would seem that the trip was very successful. The idea apparently appealed to South Carolinians, for a similar car was fitted and sent to South Carolina producing centers during the recent harvesting season.

Mountain Products

In addition to the work with sweet potatoes and apples, some attention was given to grades and packages for bunch grapes, and plans are under way to include cabbage as soon as possible. Both potato grades and apple grades, as recommended by the U. S. Department of Agriculture, have met the approval of the growers and have been adopted as the legal standards for North Carolina.

Mountain potato growers are being advised to either sell at digging time or to build coöperative warehouses along the sidings. A study of the past results indicates that on an average the growers selling at harvest time make the most money. The crop comes in ahead of the bulk of the northern crop and hence it has less competition. Prices may be higher during the winter, but at that time it is impossible to dig the potatoes from the bank storages. A little later the thaw comes and it is impossible to haul over the mountain roads. When the roads dry out it is warm enough to permit heavy movement from all the leading northern and western producing sections, and hence the North Carolina potato goes on the spring market in competition with the product

from other sections where growing costs are materially lower. Should the grower store in commercial houses along the sidings, they might take advantage of the high prices during the winter and when competition from other sources is practically impossible.

Apple growers are being urged toward improved grading and packing methods. The unusual quality and color of the North Carolina apples makes them especially suitable for the fancy trade, but extreme care must be used in packing, grading and sizing of this class of fruit. So many growers still spray carelessly, or not at all, that the apple industry is not what it might be, considering our wonderful natural advantages.

The first Western North Carolina Apple Show held at Asheville (October 27, 28, 29) was a revelation to those who attended. The show was successful, not only as an educational exhibit, but as an advertising medium as well.

The southern market rightfully belongs to North Carolina apple growers, but in the past many of them have flooded these markets with inferior stock, thus seriously curtailing the demand for all North Carolina fruit. In the meantime the dealers have been purchasing more and more of western and northern fruit, and it is only by putting on the market a distinctly superior pack that our growers can gain prestige in this section. Our uniform state grading system should make this possible.

Fruit and Truck Marketing Associations

During the past year the Division of Markets has assisted in the organization of two coöperative associations of peach growers, a trucker's association, the State Horticultural Society, with its separate marketing organization, an association of apple growers, and a soil improvement association. The latest demand for assistance comes from the cantaloupe growers of the Laurinburg section. They will grow 60 to 100 acres in 1921. Organization of potato, apple and cabbage growers are needed all over the mountain counties. In this section coöperative cold storages on railroad sidings would facilitate the marketing of enormous quantities of perishable products which at present never reach a market.

Standardization of Grades and Inspection Service

Meetings have been held at important producing sections with an idea of discussing with the growers what requirements should be included in the grading standards for various products. Already the grades as recommended by the U. S. Department of Agriculture have been adopted as legal standards for North Carolina strawberries, potatoes, sweet potatoes, and apples. Studies of grades for peaches and grapes are contemplated. Numerous meetings have been held to explain and demonstrate the various grading standards. Studies have also been made of the many types of containers in use in this state and the better types have been endorsed through speech, demonstration and the press.

Considerable improvement has been made in the grading and packing as a result of the 1919 inspection work. Because of a serious shortage of men in this division this work has been handicapped during 1920. A member of this division served as inspector for the Chadbourn strawberry belt and local inspectors for potatoes at Mount Olive and Bethel were appointed. This work cannot be continued in full swing, however, until additional help is secured.

Market News Service

In coöperation with the Federal Bureau of Markets this division supplied the men for operating the strawberry daily market reports from Chadbourn again this year. The season was a short one, but a very successful one for

the growers. It is believed that the acreage will be increased very much another year. Thirteen daily reports and a summary were mailed to a list of over 400 growers.

During September, October, and November ten weekly apple market circulars were mailed to 800 North Carolina growers and a number of newspapers have coöperated by publishing these reports, so that almost every apple grower in the state has had ready access to this information. These reports consisted of information from the Federal Bureau of Markets and clippings from the trade papers, supplemented with voluntary reports from growers in all the important North Carolina producing sections, and from dealers in all the important southern markets. Judging from the remarks of the growers and the coöperation of the dealers, this is the most popular market news service ever attempted by this division. This is largely because of the fact that we have attempted to cover thoroughly the particular markets in which the growers were interested. This information, unfortunately, could not be secured from the Federal Reports. Another interesting feature is the large number of local loading point reports.

Our lines of market news service are the Weekly Price Report and the Weekly Hog Market Quotations. The aim is to feature market news service work in all lines during the coming year. It is believed that the proper type of market news service offers us greater opportunities for assisting growers than any other one phase of the work.

Exhibits

Two fair exhibits were installed during the year. The first of these consisted of a three-booth exhibit at the State Fair. One booth featured cotton warehousing and the State Warehouse System, another the use of the truck as the ultimate solution of the short haul, and the third booth was divided between mechanical sizing of fruit and coöperative marketing of wool through blankets. The second exhibit was at the W. N. C. Show at Asheville. Here again we featured wool marketing and rural transportation. Transportation difficulties prevented the exhibiting of the mechanical fruit sizer constructed for that show. A great amount of interest was manifested by visitors in both these exhibits. A much more elaborate exhibit and a grading and packing demonstration should be planned for the 1921 apple show.

Publications

In addition to the market news service described, this division has issued market circulars and bulletins as follows:

Farmers' Market Bulletin, issued monthly.
Weekly Price Report.
Weekly Hog Market Quotations (November to June).
Monthly Review of Producers' Prices (discontinued since April).
Monthly Financial Statement of North Carolina Credit Unions.
Circular on Harvesting, Grading, and Packing Peaches.

News Article on Cotton Grading, State Warehouse System and Package Standardization, and Peanut, Livestock, Potato, and Wool Market.

There are two fields of activity in marketing which are at present not receiving adequate attention from this division, the marketing of tobacco and the marketing of so-called field crops. With regard to the tobacco situation it is becoming apparent that the next probable step will be the development of a tobacco warehouse system similar to the cotton warehouse system. But before we reach that stage much preliminary work will have to be done in the way of investigation, education, and organization. I therefore recommend

that authority be given for the appointment of a specialist in tobacco marketing for these purposes.

With regard to field crops this has been, it appears to me, a somewhat neglected field of opportunity. There has been much talk of a reduction of the tobacco and cotton acreages. From both the marketing and farm management points of view I am quite sure that this is the proper thing to do. But a reduction of cotton and tobacco implies an increase of production along other lines, livestock, field crops, etc. In other words when we are stimulating and aiding in the marketing of field crops we are indirectly aiding in the reduction of cotton and tobacco. I, therefore, recommend that authority be given for the appointment of a specialist in the marketing of field crops, whose duty it shall be to improve methods in the marketing of field crops, to coöperate with the U. S. Bureau of Markets in the marketing of grain and other field crops and to carry out the provisions of the North Carolina Act of 1919, establishing standards for agricultural products, so far as this law relates to him as a member of this division.

Respectfully submitted,

B. F. BROWN,
Chief, Division of Markets and Rural Organization,
State Superintendent of Warehouses.

REPORT ON DRAINAGE

To the Director:—I herewith submit the annual report on Drainage conducted under a coöperative agreement between the North Carolina Department of Agriculture and the United States Department of Agriculture. This report covers the seventeen months' period, July 1, 1919, to November 30, 1920, done in order to bring it in conformity with reports of divisions covering the crops year. Heretofore, our reports have covered the fiscal year, July to July.

The work has been conducted chiefly along the same lines as in previous years. In general, the extension part of our work consists (1) in assisting farmers in the improvement by drainage and terracing of lands now under cultivation, and (2) in making preliminary and reconnaissance examinations for drainage districts desiring to undertake drainage improvements.

Upon request, either from the county agent or the farmer, the drainage engineer makes preliminary examinations, surveys, designs, estimates, specifications and reports for tile drainage projects on the farm. A blueprint is sent to the farmer, showing the complete system of drains. When the farmer is ready to install the tile certain drains are staked out in the field and instructions given in the proper methods of construction.

Terraces are also laid off in entire fields, and instruction given in the use of the farm level and terrace construction.

The engineer also makes preliminary examinations of drainage districts. The proposed district is visited and from all available data a report is prepared, accompanied by a map, copies of which are furnished to interested parties. The method of organizing a district under the state drainage law is outlined. The following summary gives a fairly accurate idea of the amount of work done along these lines.

Mr. F. O. Bartel has continued as drainage engineer for the North Carolina Department of Agriculture throughout the year.

Farm Drainage

During the past seventeen months 36 farms, situated in 18 counties, have been visited for the purpose of giving assistance and advice in tile drainage. The areas of these tracts ranged from 5 to 1,100 acres, with a total area of 2,400 acres. Preliminary surveys for tile drainage have been made and reports issued on 26 farms, with a total area of 1,200 acres. Approximately 20,000 feet of tile have been installed on these farms.

Sixty-one farms, situated in 16 counties, have been visited for the purpose of giving assistance in the location and construction of terraces to prevent hillside erosion, the total length of terraces laid out being approximately 186,000 feet, or 35 miles.

Drainage Districts

Nine examinations of a preliminary or reconnaissance nature have been made and reports issued covering a total area of about 41,000 acres.

Miscellaneous

The results of experimental work and other general information have been published from time to time in the *Extension Farm News*. Several reports on special aspects of drainage in North Carolina have also been issued.

Respectfully submitted,

H. M. Lynde,
Senior Drainage Engineer.

REPORT ON FAIRS AND EXHIBITS

To the Director:—I herewith submit report covering work for the past four months:

Because of the resignation of the former chairman of the fair committee I was asked to handle the fair work for the fall season. I reported for duty August 20. The preliminary work of scheduling fairs had resulted in 244 fairs of different kinds being scheduled. As had been done in former years the county farm and home agents had done practically all of the organization work.

In the mountain district, consisting of 18 counties, two special fairs, one district fair, six county fairs, and 38 community fairs were held.

In the Piedmont district, including 23 counties, one special fair, two district fairs, eight county fairs, and 53 community fairs were held.

In the central district, consisting of 21 counties, there were two state fairs (white and colored), two district fairs, 15 county fairs, and 44 community fairs.

In the eastern district, consisting of 19 counties, no special fairs, two district fairs, 11 county fairs, 38 community fairs were held.

In the northeastern district, consisting of 19 counties, no special fairs, one district fair, three county fairs, and 15 community fairs were held.

In all the fair work in the state we gave special attention to social and educational work. To do this it was necessary to have a rather well organized plan of work for the year. Our first step was a grouping of the heads of the various divisions of the Department of Agriculture and the College of Agriculture into a fair committee. This committee had the matter of outlining the policies of the various interested departments to fairs. These policies were given to the county farm and home agents, with the directions of applying them to their local conditions in the most effective manner possible. The county agents followed this idea out by organizing in various communities a community fair organization. Subcommittees, such as livestock committees, were appointed in these organizations to work up interest in and exhibits for special articles. From time to time the county agents met with these committees to give special instruction in selecting exhibits and in arranging them. The most effective educational work was done in this way.

The social side of this work was developed in getting up plays and other forms of entertainment to raise the necessary expense for staging the local fairs and in arranging local attractions for the day of the fair. Where tried, athletic contests, community singings, and picnic dinners proved very effective in developing good community spirit.

The county and district fairs were usually organized and financed by a few local men, forming an association for the purpose. The county agents were usually the mainsprings of these organizations. The main educational value of this type of fairs was found in the comparison of different exhibits and any explanations the growers might make as to their growth and selection.

Judges were furnished all these fairs from the College of Agriculture and the Department of Agriculture. As far as it was possible to do so the judges explained their reasons for placing exhibits. This feature always drew a number of interested exhibitors.

The most outstanding piece of work was the Western North Carolina Apple Show, held at Asheville. This was staged almost entirely through the efforts of the extension workers, with the chief object of bringing to the attention of the people of this section the opportunity of the apple grower. The show resulted in eighty-nine exhibitors being present with more than one thousand plate exhibits, and one thousand bushels of apples exhibited in commercial

packs. More than 25,000 people visited the show, admission to which was free. As a result of getting the apple growers together a North Carolina Horticultural Society was formed with a well-planned program of work for the next year. The members of this organization expect to perfect county organizations of fruit growers and in this way greatly stimulate the interest in fruit growing and work out the economic problems now confronting the fruit growers of the state. Special fairs, such as the apple show, gives us best results from an educational standpoint.

Another outgrowth of the apple show was the formation of a sales organization which will maintain in some city in Florida an apple sales and exhibition display during the tourist season.

A very decided increase in interest in home conveniences has been the most noticeable change. This is largely due to the personal efforts of the extension agents, but the fairs have helped materially to crystalize these efforts by putting on exhibits of home conveniences.

White Fairs—State, 1, special, 4; district, 8; county, 34; community, 161. Total number scheduled, 208.

Negro Fairs—State, 1; county, 9; community, 28. Total number scheduled, 38.

Total amount of premiums authorized to date, $4,696.56.

There will be about $1,500 in premiums to be paid to fairs reporting after the first of December.

Total expenses of judges to date, $922.05.

Respectfully submitted,

J. M. GRAY,
Acting in Charge of Fair Work.

REPORT OF THE DIVISION OF PLANT PATHOLOGY

To the Director:—I submit herewith my report of the extension work in Plant Pathology for the fiscal year ending June 30, 1920. The work was conducted jointly by the North Carolina Department of Agriculture and the North Carolina College of Agriculture and was carried on in coöperation with the county agents. This report includes work done by the latter under our supervision. Mr. S. G. Lehman assisted with the work during the months of July, August, and September.

Cotton Anthracnose

The work on cotton anthracnose begun in 1918 was continued in coöperation with the Division of Agronomy. In 1919 about 950 acres of cotton were grown under our supervision, from which about 19,000 bushels of high grade seed were obtained. Although some of these seed were shipped to states further south, most of them were planted in North Carolina in 1920. The fields in which these seed were grown were carefully inspected in the fall of 1919 and very few of them had over 1 per cent of the bolls infected with anthracnose, while many of the fields grown from inferior seed had from 10 to 85 per cent of infected bolls. In 1920, about 1,000 acres of cotton were planted by coöperative growers and breeders, from which about 20,000 bushels of high-grade seed for planting purposes in North Carolina in 1921 will be obtained. Work with coöperative growers was conducted in the following counties: Anson, Cabarrus, Columbus, Craven, Edgecombe, Hertford, Johnston, Lenoir, Mecklenburg, Montgomery, Nash, Onslow, Pasquotank, Pitt, Robeson, Sampson, Union, and Wayne.

Cotton Wilt

The work with cotton wilt begun in 1918 was continued. The Dixie wilt-resistant cotton, which was grown in seven counties, proved to be very resistant to the wilt disease. The most striking results with Dixie cotton were obtained in Robeson County. When other varieties were planted, about 80 per cent died and gave a yield of about 300 pounds of seed cotton per acre, while Dixie cotton grown on the same land, with exactly the same cultural methods, gave a yield of 1,300 to 1,500 pounds seed cotton per acre. Dixie cotton was planted under our supervision in Anson, Edgecombe, Johnston, Pitt, Robeson, Sampson, and Wayne counties in 1920.

In order to obtain a wilt-resistant variety of cotton, suitable for boll weevil conditions, several crosses between Dixie and earlier maturing varieties have been made by the U. S. Department of Agriculture. Several of these varieties have given very satisfactory results, and one of them, the Dixie-Triumph, has replaced much of the Dixie cotton this year in South Carolina. This variety was tested in Edgecombe and Wayne counties this year. It gave very satisfactory results, being fully as resistant to wilt as the Dixie cotton.

Sweet Potato Diseases

In coöperation with the Division of Horticulture and Division of Markets, a baggage car loaned by the railroads was equipped with exhibition material showing the culture methods, diseases, storage, and marketing of sweet potatoes. This car was granted free passage over the main railroad lines in the most important sweet potato growing portions of the state. The writer accompanied the car and explained the nature and control of sweet potato diseases and distributed literature on that subject. The car traveled 1,100 miles by rail and over 3,000 interested visitors examined the exhibits. Thirty stops were made in 22 different counties. The following counties were visited:

Lee, Moore, Richmond, Robeson, Scotland, Bladen, New Hanover, Columbus, Johnston, Cumberland, Wayne, Edgecombe, Beaufort, Lenoir, Pitt, Durham, Granville, Guilford, Iredell, Catawba, Wilson, and Wake.

Apple Diseases

In coöperation with the Divisions of Horticulture and Entomology, demonstrations to show the best cultural and pruning methods for apples and the best method for spraying them to control insect pests and plant diseases were begun in Buncombe, Madison, Polk, Yancey, and Avery counties. It was planned to conduct these demonstrations over a period of several years. Up to the first of July the apple trees received four sprays, a dormant spray with concentrated standard (32 degrees Baume) lime-sulphur, 1 part in 8 parts water, a spray when the pink first showed in the fruit buds, another when the petals were seven-eighths fallen, and another three weeks after that, using standard lime-sulphur, 5 quarts to 50 gallons of water to which 1 pound of powdered arsenate of lead was added to every 50 gallons of solution. In each orchard a few trees were left unsprayed as checks. By July 1 the difference between the check trees and the sprayed trees was very evident. Frog-eye leaf spot was very prevalent on the leaves of the unsprayed trees and some of them were so badly affected that many of the leaves were dropping. There was very little frog-eye spot on the leaves of the sprayed trees. There was an appreciable amount of fruit only in the demonstration orchards in Buncombe and Yancey counties and the fruit on the sprayed trees was much healthier than that on the unsprayed trees.

Tomato Diseases

The spraying demonstrations begun last year in Avery and Mitchell counties were continued and excellent results obtained. Late blight appeared on all of the unsprayed vines about the middle of July and in Avery County the unsprayed vines were all killed before any ripe fruits were produced, while in Mitchell County only a few ripe fruits were obtained from them. In both counties the spraying with 5-5-50 Bordeaux mixture every ten days to two weeks controlled late blight and an abundance of sound fruits were obtained until the vines were killed by frost. The addition of two and one-half pounds of resin-fish-oil soap to the 5-5-50 Bordeaux mixture gave increased yields only when Septoria leafspot was present.

This work was continued in Avery and Mitchell counties in 1920. In Mitchell County one demonstration was located at Spruce Pine, another about one mile from Spruce Pine, and another was located about two miles from Spruce Pine. In Avery County one was located at Heaton, one at Plumtree, one at Ingalls, and two at Banners Elk. Spraying demonstrations were also located in Transylvania County, two being located at Brevard, one at Quebeck, and one at Lake Toxaway. The tomato vines in all of the demonstrations were staked to facilitate spraying. All of the demonstrations were divided into three plots; one plot was left unsprayed as a check, one plot was sprayed with Bordeaux mixture 5-5-50, and the other plot was sprayed with Bordeaux mixture 5-5-50, to which two and one-half pounds of resin-fish oil soap was added to every 50 gallons of the mixture. Up to July 1 no late blight had appeared in any of the plots, but in the plots at Brevard, where the elevation is about 2,000 feet, the unsprayed plants were very severely injured by Septoria leafspot and many of the fruits were rotting. In the plots sprayed with resin-fish-oil soap Bordeaux mixture, the disease was almost completely controlled, while in the plots sprayed with plain Bordeaux mixture, the disease was only partially controlled. All of the other demonstrations were located at elevations of 3,000 feet or over and the amount of Septoria leafspot infection was very slight.

Irish Potato Diseases

In coöperation with the Division of Entomology a demonstration on the control of Irish potato diseases was conducted in Columbus County. The Irish Cobbler variety was used in all of the tests and three types of seed were used, namely: Maine certified seed, Maine uncertified seed, and fall home-grown seed. Half of each type of seed was treated by soaking the tubers for one-half hour in a 1-1000 solution of bichloride of mercury. When the treated tubers were cut all of them having discolored flesh were discarded and every time a potato was discarded the knife was disinfected in a solution of formaldehyd (1 pint to 30 gallons of water) after cutting into it. The remaining half of the potatoes were planted without selection or treatment.. After planting the field was divided into three plots so that some of the treated and untreated potatoes of each kind of seed were in each plot. One of thse plots was sprayed with Beetle Mort, one with Bordeaux mixture 3-4-50 with 2 pounds of powedred arsenate of lead added to every 50 gallons of the mixture and one with arsenate of lead added to every 50 gallons of water. The vines received two sprayings and no differences could be observed in the appearance of the tops in the different plots.

Unfortunately the variation in the drainage of the plot was so great that it influenced the yield and stand in different parts of the field more than the difference in treatment and the difference in sed. However, the difference in the percentage of diseased plants gave very interesting results, which are indicated in the following table:

PERCENTAGE OF DISEASED PLANTS

	Maine Certified. Treated.	Maine Certified. Untreated.	Maine Uncertified. Treated.	Maine Uncertified. Untreated.	Home Grown. Treated.	Home Grown. Untreated.
Mosaic and curly drawf	.20	.22	3.46	5.46	19.84	15.93
Rhizoctonia	.05	.51	.45	1.97	.77	1.55
Wilt	.40	1.19	.62	3.18	.....	.31

These results were exactly what was expected. Mosaic and curly dwarf were most prevalent in the home-grown seed and least prevalent in the Maine certified seed. Rhizoctonia was least prevalent in the Main certified seed and was controlled very well by the seed treatment. Wilt was most prevalent in the Maine uncertified seed and was very well controlled by treatment and selection. Unfortunately, the plants were examined for wilt too late in the season to distinguish between Fusarium and Bacterial wilt. The lack of complete control by treatment and selection in the case of Wilt and Rhizoctonia may have been due to soil infection.

General

Many individual farms were visited in company with the county agents and the owners or managers were told how to recognize and control the diseases which were found. An exhibit was prepared for the North Carolina State Fair, which was visited by a large number of farmers who were given information about various plant diseases. Meetings of county agents were attended and plans for next year's work were discussed. Meetings of farmers were addressed on the subject of plant diseases.

Publications

A paper on the subject of the "Control of Late Blight of Tomatoes in the Blue Ridge Mountains" was published as the November number of the *Bulletin* of the North Carolina Department of Agriculture. Papers on the subjects of the "Control of Cotton Wilt" and the "Control of Cotton Anthracnose" and "Improvement of Cotton" were published in the January supplement of the *Bulletin* of the North Carolina Department of Agriculture (Vol. 41, No. 2). A spraying calendar for apples in North Carolina was compiled in coöperation with the Divisions of Horticulture and Entomology and published as Extension Circular No. 101. A number of popular articles on various plant diseases were published in the *Extension Farm News*.

Respectfully submitted,

R. A. JEHLE,
Extension Pathologist.

REPORT ON FARM MANAGEMENT

To the Director:—This office, dealing as it does with farming, farm organization and practices, feels very quickly changes in rural economic conditions tending to increase or decrease profits from different farm enterprises. Its activities therefore should be subject to modification in keeping with or in advance of economic changes actually occurring in the field of agriculture. Bearing this in mind a very brief review of certain important conditions and their changes from the beginning of 1919 to the close of 1920 may well precede our regular report.

At the beginning of 1919 prices for all agricultural products were higher than they had been during the active life time of the present generation of farmers. The scale was still ascending. No one seemed to have any clear conception of the limit to which farm products would go or how long it would take to reach that limit, neither how long nor how short would be the period over which the highest prices could be maintained. The prices for one year were used, consciously or unconsciously, as the standard by which costs for the next were gauged. Due to the rapidly ascending market and in spite of the cost of production the year 1918 brought increased prosperity to our farmers. This was repeated to even a greater degree for the year 1919, with the exception of a few farm enterprises confined to lines of minor commercial importance.

With the price history of 1917, 1918, and 1919 as a guide our farmers projected their 1920 crop work on a basis of higher costs than they had ever previously considered. But even by the middle of the latter half of 1919 the decline in prices had started. First came the drop in the price of fat hogs, followed shortly by similar but less marked changes for other classes of livestock and stock products. Our commercial crop products though brought even higher prices at the close of 1919 and even into the main planting season of 1920.

These conditions served to induce our farmers to concentrate on what apparently were the commercially important enterprises and to neglect supply crops, and live stock and stock products.

The break in crop prices began to show about one year after that in livestocks. The 1920 wheat crop, as it was ready to go to market in July of this year, brought forth price offers well below the cost of growing and putting it on the market. Tobacco soon followed with a like experience, then came cotton and peanuts in their turn.

This year many land-owning farmers of long standing will lose practically all their accumulations of the past three or four years, and financially will be very little, if any, better off than they were at the end of 1916. Tenants or croppers of the earlier year, who have saved and invested conservatively in farm lands or other forms of property, will at the end of 1920, be in much better condition than formerly, while those who have been stampeded into investing their savings in farm lands or other property at highly inflated prices, often in competition with professional speculators, either at public or private sales, stand good not only to lose their profits of the last three or four years, but in many cases the accumulations of a dozen of years, and then be heavily handicapped by secured and unsecured obligations.

Farm organization, management, practices, capitalization, credits, buying of productive materials and selling finished farm products will be exceedingly important questions during the next few years to at least the following four classes of farmers:

1. The landowner, who is no further ahead now than in 1916.

2. The cropper or tenant of 1916, who by saving and investing conservatively, has become a farm or property owner practically out of debt, but facing new conditions.

3. The cropper or tenant of earlier days who has bought farm lands or other property at inflated prices, and beyond his means of payment.

4. The young or new farmer attempting to establish himself, either as owner or tenant.

Our Work For 1920

In keeping with the conditions and changes above outlined our work for 1920 has been carried out.

First, to retard, if possible, the drop in prices of commercial agricultural products below the actual cost of production.

Second, to promote the organization of farms on what seems to be a sounder and safer economic basis.

Third, to show exactly what is needed in the way of home supplies for the family and feeds for livestock to make a self-sufficing or supporting type of agriculture.

Fourth, to show that such a program is within reach of the farmer and that it can be carried out without materially interfering with a safe commercial type of farming.

These topics are discussed much more fully in the following pages.

Survey Covering Practices on Dairy Farms and Cost of Producing and Marketing Milk

To determine the cost of producing and marketing milk and to study practices on dairy farms was made the main object of a survey covering a number of farms in Mecklenburg County. This work was taken up in coöperation with County Agent C. E. Miller, who, to a very large degree selected the farms to be studied and worked up a favorable sentiment among the farmers.

In some respects the results of this work were disappointing, as they showed that only 20 per cent of the farms studied were making more than expenses out of their dairy herds.

After collecting the data the records were divided into groups based upon the method followed in disposing of the milk. One of these groups disposed of its milk by wholesale or in bulk to pasteurizers and distributors, who, after subjecting it to pasteurization delivered to domestic consumers directly or to restaurants, drug stores and small groceries, from which it reached the consumer by various routes.

Of the farmers disposing of their milk wholesale 16⅔ per cent, or one out of 6, made expenses and a slight profit on the dairy enterprise. About 33⅓ per cent sustained a very slight loss, or after paying other expenses had less than average laborer's wages for themselves and members of their families. The remaining 50 per cent sustained losses heavy enough to put them out of business in from two to five years had they not had some more profitable enterprise to overcome the deficiencies from the dairy.

This group as a unit produced milk at an average cost of 47.5 cents per gallon, and sold it for 45 cents. One-sixth produced at a cost below 40 cents per gallon. One-third at 45 to 50 cents and one-half at above 50 cents per gallon.

The second group, in addition to producing, distributed milk to the consumers. The cost of production on these farms was 46.4 cents per gallon, while the delivery cost was 16.9 cents, making a total average, when the milk reached the consumer's door, of 63.3 cents per gallon.

Twenty-five per cent of the farmers in this group produced and delivered milk at slightly below the average cost. Fifty per cent at slightly above the average cost, and twenty-five per cent considerably above the average. Fifty per cent of the farmers in this croup made profits of from 1 to 10 per cent above the cost of production. Twenty-five per cent sustained slight losses, while an equal per cent of them sustained losses which would drive them out of the business in a short time if there had not have been other more profitable farm enterprises.

The quality of the cows kept, the quantity and quality of foods bought, and the prices paid for it, the quantity and quality of home grown feeds, including silage and pasture used and labor used and its cost seemed to be the most important factors in cost of production.

Salesmanship and ability to make collections, on the part of the driver of the delivery wagon, seems to have been the most important factors after the milk left the farm.

Work on Farm Survey Data

The office of Farm Management and Farm Economics, U. S. Department of Agriculture, gave us the use of several expert clerks in analyzing, classifying, checking, and tabulating survey data covering two years' operations on approximately 320 Catawba County farms. In using this clerical force I had to spend about three and one-half months, beginning in March and ending the latter part of June, in the office of Farm Management, at Washington, D. C. During this time there was an average of between four and five clerks working on our data. We thus got work done free of cost to the state that would have required the constant time of one clerk in our office for a period of fifteen months. The data has been worked over and fundamental tables prepared according to the most modern and government approved methods.

From the fundamental tabulation the main tables used in the writeup of the manuscripts for publication are being derived. The first of these manuscripts will be ready for the printers early in 1921.

Work and Exhibits at the Farmer's Convention and at the State Fair

The change in economic conditions, barely noticeable at the beginning of the year, were so thoroughly felt by the middle of June that many farmers were apprehensive of the final outcome. Especially was this true with those who had neglected the growing of home supplies and increased the strictly commercial enterprises up to the limit of land, labor and capital.

With prices falling below the cost of production, first for some classes of livestock and stock products, second for wheat and perhaps other grains, then for tobacco, cotton and peanuts, each as the usual marketing season approached, the strictly commercial farmer was facing prospects of heavy financial losses and in many cases bankruptcy.

In order to relieve the above situation if possible and to prevent its reoccurrence in the near future we renewed our efforts to stimulate interest in a self-sufficing and commercial agriculture combined rather than either type alone.

For that one purpose a series of 11 charts, showing some of the important factors in combining a self-sufficing and commercial agriculture on an easily worked basis, was prepared and exhibited at the Farmers' Convention held the latter part of August. Some of these charts and other matter were used at the State Fair in October. Mimeograph copies were prepared to mail out to parties sufficiently interested to register their names in a book provided for this purpose. We thus got a mailing list of approximately 500 farmers and other interested parties.

The following is a list of the charts by title:

1. Farm Grown Supplies Required Annually by a Family of Four Average Adults.

2. Field Crops, Forage and Pasture, Cotton Seed Meal, Fruits and Vegetables for the Two-horse One Family Farm.

3. Land and Work Required to Produce Supplies for the Two-horse One Family Farm.

4. Livestock Needed to Operate the Two-horse Farm, and Provide a Good Supply of Meat, Milk, Butter, and Poultry for a Farm Family.

5. A Good Distribution of Land Among Crops for the One Family Two-horse Coastal Plains or Piedmont Farm.

6. Cost of Work Stock on the Farm.

7. The Farm Horse, His Keep and Duty.

8. The Relationship of Acres Worked Per Horse to Distribution of Land Among Crops.

9. Work Rquiered Per Acre by Important Field Crops.

10. Cost of Keeping Cows on Five North Carolina Farms Having Registered Jersey Cows.

11. Cost of Keeping Cows on Nine North Carolina Farms Keeping Grade Cows.

Work at Community and County Fairs

One week early in October was given to county and community fairs, where I judged field, orchard, and garden products. I also judged horses, mules, cattle, hogs and poultry at one fair. In addition to judging stock and farm products I held conferences with farmers on various branches of farm organization and practices, and visited two or three schools and talked on better farming to the teachers and pupils.

Farm Survey Work Outside the State

With several of the United States Department of Agriculture Farm Management men located in the south I joined in a survey of rice farms in Texas, Louisiana, and Arkansas. In addition to the regular farm organization and practice survey we collected labor and all other necessary data to use in determining the cost of growing and preparing this year's rice crop for the market.

This rice survey work while it is entirely outside of North Carolina and is of but little interest to our farmers, directly required almost two months of my time. As the government paid my salary and all expenses on this trip, North Carolina put out no money on its account. However, our work in the state for November and December was seriously broken into. Some projects which should have received attention in the late fall and early winter were necessarily delayed two or three months, while others had to be abandoned entirely.

Respectfully submitted,

J. M. JOHNSON,
Agriculturist in Charge.

REPORT ON FARM FORESTRY

To the Director:—The following report on the activities on Farm Forestry for the period between January 1, 1920, and December 31, 1920, is respectfully submitted:

The work has been carried on as undertaken during the calendar year 1919 and has thus given fresh impetus to the educational phases of farm forestry, in addition to stimulating a healthy interest in the value of forestry methods as applicable to farm woodlands from a monetary standpoint.

General Forestry Educational Propaganda

One article, entitled "Farm Timber and Its Value," has been written for the *Progressive Farmer*, Raleigh, N. C. This article was requested, in view of the many inquiries received by the publication, and was written to answer reasons for shortage in wood products, methods of preparation for market, marketing information, and a basis for valuing manufactured farm wood and products. Many inquiries have been answered as a result of this article and it is hoped farm timber owners were able to realize on their woods property.

Several news items and forestry articles have been written for publication in the North Carolina *Extension Service News* and thus have found their way to the public press.

A number of county demonstration agents have been visited in the course of the field work and in so far as was possible have been aided in their farm forestry problems.

One lecture, before the North Carolina Forestry Association, was given on the occasion of its annual meeting in the summer of 1920.

One Farmers' Institute, at Haw Fields School, was attended and the specialist was furnished an opportunity to talk to the institute on the application of farm forestry to typical woodlands in Alamance County.

Marketing Information

Membership in the Lumbermens' Bureau, Munsey Building, Washington, D. C., has been continued, and we have thus been able to keep in touch daily with lumber marketing centers. The information on file has been furnished owners wishing to market their wood products.

During the past year more than 225 inquiries as to markets, preparation for market, species most readily marketable, and prevailing prices for same were handled.

Specifications and prices on cross-ties have been furnished this office from time to time by the main-line railroads operating in the state. We have further been furnished with the names of local railroad inspectors and have thus been able to refer farmer tie operators to a direct market. In such cases better prices have been realized through the elimination of the middleman.

Timber Preservation

This office has been equipped with an open-tank fence post treating apparatus, made from our own specifications. It was felt that this plant should be so constructed as to be easily made by any one wishing to treat fence posts on the farm. Further, it was demanded that the outfit be inexpensive.

In line with the above an ordinary gasoline drum from which the head had been removed was fitted with a section of 2½-inch black iron pipe, bent to U-shape and coupled at both ends to the side of the drum in a vertical position. The head, removed from the drum, was bored with a number of 1-inch holes

and on being placed in the bottom of the drum allowed for circulation of the preservative and prevented scorching of the bottoms of the posts when heat was applied in the treating process. The entire cost of the open-tank plant, as described above, was $32.75, and this sum included the material and labor costs.

This tank was used in a demonstration at the Farmers' Short Course, held at the A. & E. College, West Raleigh, N. C., August 26-28, 1920.

In the demonstration two kinds of creosote preservative were used, Barrett's "Carbosota" and Western Electric Company's "Liquid Creosote Oil." Fifty-four fence posts were treated and approximately 110 persons attended the demonstration during the two afternoons it was carried on. The treated posts are to be set on the Experiment Station Farm in West Raleigh for observation over the period of their use.

Reforestation

This office has completed plans for the artificial planting of a plantation near Wendell, N. C. This plantation is absolutely treeless and the owner desires to establish a longleaf pine woodland on the tract. Seed has been secured and the work will be carried through the nursery, transplant beds, and final placing of the seedlings on the area to be forested.

Several such projects could have been arranged for had it been possible to secure the necessary pine seed. A bad seed year and the prohibitive wages demanded by labor for collecting prevented the dealers from securing any appreciable crop.

Land Clearing

Many farm operators in the state are handicapped in bringing in new land by reason of the excessive amount of underbrush which sprouts after the timber has been cleared off. This trouble is particularly one of the hardwood producing section of the state and it has operated to handicap owners from increasing their productive acreage.

A series of experiments have been conducted with compounds recommended as preventing sprouting of cut stumps. In the case of several of the compounds tried successful results were obtained. The cost of treatment was practically negligible. This office has furnished the results of these experiments to several of the agricultural papers and has further answered and advised inquiring farmers as to the compounds and the nature of their application.

Examinations

This office has continued its former policy of making examinations of farm timber tracts, upon application of the owner, for purposes of recommending the procedure for management, marketing, protection, and sale.

The following table shows, in brief outline, such information on the field work in farm woodland examinations as is pertinent to this report:

County	Date	Owner	Acres		Object	Timber, Board Feet
			Farm	Woodland		
Alamance	May 5-7	Pleasant Dixon, Haw River, R. F. D.	210	65	Estimate	610,000
	July 27-28	Mrs. N. Guthrie, Saxapahaw, R. F. D.	88	8.5	Trespass	54,000
Durham	April 12	M. A. Griffin, Nelson	330	120	Estimate	3,000 cords
Franklin	Mar. 17-19	Charles Sherrod, Louisburg, R. F. D.	390	140.5	Estimate	2,410,000
	Mar. 22	Alfonso Sherrod, Louisburg, R. F. D.	560	116.7	Estimate	2,510,000
	Mar. 24-25	Marvin Smith, Catesville	(?)	14	Estimate	150,000
Harnett	May 19	Joseph Fish, Angier, R. F. D.	173	115	Estimate	920,000
	Aug. 11	J. F. Fish, Willow Springs, R. F. D.	95	45	Insect control	
	Sept. 22	J. J. Adams, Angier, R. F. D.	110	65	Hardwood cutting	
	Oct. 2	J. J. Adams, Angier, R. F. D.			Supervision above	
Orange	April 1-3	D. D. Graves, Orange Grove	135	52	Estimate	174,000
	April 14	O. L. Lloyd, Oaks	126	63	Estimate	494,000
	Sept. 15	J. S. Graves, Oaks	72	34	Estimate	2,200 ties
Wake	April 7	Mrs. L. D. Pearson, Apex	240	224	Progress inspection	
	May 15	R. D. Jones, Fuquay Springs	235	110		343,000
	Aug. 14	H. A. Jones, Raleigh, R. F. D.	146	80	Estimate	1,200 cords
	Aug. 25	J. W. Stephenson, Kennebec	64	30	Improvement cutting	
	Nov. 3	Snow Farm Estate, Millbrook	75	43	Marketing hickory	
Totals				1,376		7,839,000 4,200 cords 2,200 ties

The foregoing shows the general manner in which the work previously undertaken has been continued.

The following outlines new work undertaken during the past year; new work which should round out the service which is offered farm timber owners of the state.

Marketing Farm Woodland Products

As previously stated in this report we are kept informed on the local and national timber and lumber markets; wood products which can be most readily marketed; purchasers for same, and the prices obtainable.

With this information it is possible to place farm timber operators and timber or lumber buyers in contact. This has resulted in sales of farm timber products at profitable figures.

In the conduct of this work the specialist has advised in the manufacture of more than 1,700,000 board feet of hardwood and pine lumber for four farm timber owners.

This office has been instrumental in the sales of more than 625,000 board feet of hardwood and pine lumber at an average price of $31.30 per M board feet for pine and $72.14 for hardwoods. The hardwoods were principally white oak. These prices were f.o.b. mill points.

It is believed that all of the lumber manufactured would have been marketed had it not been for embargoes to northern consuming centers during the period of high prices in the past year and the practical collapse of the market when the embargoes were lifted. The unsold lumber, however, can be carried until the expected rise in lumber prices for the spring of 1921 is realized.

Even during the present period of below-cost-of-production prices for lumber, one of the farm timber operators has secured contracts for railroad car lumber which should keep his plant running at considerable profit for a period of not less than ninety days.

This office further has assisted farm timber owners in the direct marketing of 2,253 railroad cross-ties to the main line railroads operating in the state and to one of the northern roads which purchases in this territory. It is believed that a direct profit of not less than twenty cents per tie has accrued to the sellers by reason of direct marketing rather than sales of the ties to local buyers.

In addition to supervising the work on the four farm timber operations, the specialist has consulted with owners of farm sawmills and has endeavored, in so far as was possible, to instruct in the methods of proper manufacture, production of readily salable wood products, efficient logging and manufacturing processes, and the purchase of suitable machinery. More than 38 such small plants were visited during the year.

In handling the volume of work outlined in this report 1,622 letters have been written and 183 conferences held. Travel includes: By team, 368 miles; railroad, 2,980 miles; automobile, 4,714 miles.

Respectfully submitted,

HARRY B. KRAUSZ,
Farm Forestry Specialist.

REPORT ON FARM ENGINEERING

To the Director:—The interest in running water for farm homes and demand for work along this line has been so great that more time has been given to this than to any other work. There has also been a great interest shown in lights and the other conveniences for homes, including especially the electric iron and electrically operated washing machine, churn, cream separator and fan.

The work along all of these lines has been carried to the people through the press, meetings of county agents, by visiting county agents who had several propositions in view, making trips to see individuals where there were several of these in one section who had written in, and by holding meetings and putting on actual demonstrations.

With water supply work 164 actual propositions were looked over, and plans with bills of materials and estimates of cost given. Later in 21 cases where everything was ready, an actual demonstration was put on. At this time other farmers who were interested along this line were called in so that they might use this as a working model. In one community in Lee County we had six farmers who were interested in one form or another of water supply for their homes. All of them got their water from wells. A complete bill of materials was gotten up for one of them, including pump, tank, home-made tower, and complete kitchen installation, with estimate of cost. Then when everything was ready an actual installation was put in at the place, the others helping this man, and from this they are to get the necessary tools and help each other put in their own water supplies.

Another interesting case is the one at Crossnore, N. C. They have a new steam-heated school building for one hundred and fifty pupils, with teacherage, cheese factory, and four homes in the small village where they had no water supply. A combination hydraulic ram was put in, using a small branch to pump water from a spring to a 5,000 gallon reservoir on top of the mountain. This gives them a constant flow of 100 gallons per hour in the reservoir, with a pressure of 50 to 60 pounds at the buildings.

More calls have come in from people who have seen these actual installations in various communities than from any other source.

I have only given an account of propositions visited, and not of the many others which were taken up through correspondence, in many cases of which prints showing different systems were sent.

Home convenience campaigns were put on in three counties, with a total of thirty meetings and an estimated attendance of 1,890. In these campaigns a truck was taken from place to place, fitted up by the local dealer with electric lighting plant, water system, washing machine, churn, iron, vacuum cleaner, and fan. The truck was usually used for the platform talks, after which demonstrations were given.

Hydro-Electric Plants

Twenty-six locations for hydro-electric power developments were looked over, ranging in power possibilities from four to forty horse-power. After making investigations the men usually find that these propositions are too expensive in first cost.

Electric Lighting Plants

Seventy-two different homes were visited where they were interested in small electric lighting plants, and advice given as to what might be expected from these. The electric water pump is encouraged in connection with the lights, where both are wanted.

Farm Machinery

One hundred and fifty-six farmers advised personally as to machines best suited for their conditions and where these could be obtained. Local tractor demonstrations, as well as demonstrations with other machines, are encouraged, and the men are also encouraged to attend the demonstrations. Care, operation, and repair of machinery already in use has also come in for a good deal of time.

Farm Buildings and Concrete Construction

Two hundred and twenty-six prints for construction of various kinds of buildings about the farm, including barns, implement sheds, homes, hog houses, poultry houses, self-feeders, water towers, septic tanks, concrete construction, etc., have been mailed out. I have forty-eight tracings now from which these prints are made.

Attended annual meeting of American Society of Agricultural Engineers in Chicago, where the various phases of agricultural engineering work are taken up and best means of accomplishing discussed.

Farm Mechanics

Seven club encampments and one boys' short course were attended, with a total attendance of 600. At each of these a part of the following work was given: Gas engines, belt lacing, rope tying, hydraulic rams, making hog crates and brood coops.

Respectfully,

E. R. RANEY,
Farm Engineer.

REPORT OF THE DIVISION OF PUBLICATIONS

To the Director:—During the first half of the fiscal year 1919 the Division of Publications was in charge of F. H. Jeter, whose resignation as agricultural editor became effective January 1, 1920. The present editor took charge of the division on February 2, 1920.

With the exception of changes noted in this report the work has been conducted along the same lines as in the past. During the fiscal year the division issued 15 extension circulars, with a total edition of 126,000 copies, of which 60,000 were mailed. Individual requests for publications have averaged about 1,000 a month, some of them involving as many as 25 or 30 separate titles. Six poster bulletins were published, aggregating 18,000 copies, and an annual report, of which 1,000 copies were printed.

A monthly publication, the *Tar Heel Club News*, was started in May, 1920. It is devoted to the interests of boys and girls organized in agricultural and home clubs and is mailed to a new list of about 9,500 club members.

The *Extension Farm News*, which until March, 1920, had been printed weekly as a "clip" sheet, was changed to a four page paper, issued every two weeks.

The *Farmers' Market Bulletin*, prepared by the Division of Markets, has been issued monthly in an edition of 4,000 copies which were mailed to a list kept in the Division of Publications. Weekly price reports and monthly financial statements of the North Carolina Credit Unions were also handled, and until recently a monthly *Review of Producers' Prices* was also mailed regularly from this office.

The State Department of Agriculture has issued a monthly bulletin and eight supplements which were edited, printed, and distributed under the supervision of the Division of Publication. In addition to the regular mailing list for these bulletins, about 12,000 copies have been mailed to libraries, specialists, and to small lists which were not routed according to postoffice regulations.

Technical bulletins No. 17 and No. 18 were issued for the Experiment Station in an edition of 5,000 each, and about 8,000 of these have been mailed.

In all approximately 150,000 separate bulletins and circulars have been distributed during the fiscal year.

Service to Agents and Other Divisions

In rendering service to county farm and home demonstration agents and to other divisions of the Extension Service, the Division of Publications has multigraphed or mimeographed 1,478 different letters and forms, aggregating 406,224 copies, and of these has mailed 291,916 to individual addresses, the others being mailed in bulk to agents or delivered to other divisions. Saving of paper, the price of which has ruled high, was effected through limiting the duplicating of letters and forms to the exact number required. At the present time with the addition of new equipment the duplicating work is being handled more efficiently and all work is delivered or mailed within 24 hours after it is received by the Division of Publications. The following percentages show approximately where the duplicating work originated: Farm Demonstration, 40; Home Demonstration, 20; Animal Industry, 15; Markets, 10; Agronomy, 5; and miscellaneous, 10.

Other service includes the handling of supplies of stationery for county agents as well as forms and questionnaires from divisions and from Washington, and the handling and filing of films and photographs taken by agents.

Efforts have been made to revise several mailing lists and although this work has been hampered by lack of funds and help during a part of the year, some progress has been made, the poultry and dairy mailing lists now being in good shape.

All small printing for the other divisions has been handled through the Division of Publications. This includes letterheads, record books, and forms for club members and county agents, and other matter that could not be handled on the multigraph or mimeograph machines.

News Service

An attempt has been made to maintain and improve the mimeographed news service issued by the division. In view of the newsprint situation and the large amount of advertising being carried by newspapers, the material sent out by the Extension Service was limited strictly to short items with a wide appeal. Conditions in the Division of Publications also tended to restrict the amount of news material issued. Some special articles were prepared for the use of dailies and these, together with the mimeographed material, were widely used throughout the state.

Some effort has been made to localize the news service through furnishing special material to agents, prepared so that they can use it in their county papers, and some exclusive articles were furnished for use on newspaper farm pages.

A class of 26 home domenostration agents attended a week's course in newswriting at Greensboro in June, 1920, given as a part of their annual short course. Several of the agents have since reported progress in furnishing news items to their local papers and have established better relations with newspaper editors in their counties.

The editor wishes to acknowledge here the courteous and capable support extended to him by members of the Extension Service staff, and especially commend the efforts made by Mr. Alford in reorganizing the work of the Division of Publications.

In June the editor attended the annual convention of the American Association of Agricultural College Editors, at Amherst, Mass., took part in the program and was elected a member of the executive committee. The exhibits at Amherst were impressive in showing how other states are devoting an increasing amount of funds and attention to the development of publication and information services.

Very respectfully,

R. W. GREEN,
Agricultural Editor.

FINANCIAL REPORT

The North Carolina Agricultural Extension Service, in account with the United States Appropriations under Smith-Lever Act, 1919-1920.

	Smith-Lever Funds	
	Federal	State
DR.		
To receipts from the Treasurer of the United States and from State sources as per appropriations for fiscal year ended June 30; 1920, under Act of Congress approved May 8, 1914 (Smith-Lever Act)	$ 166,843.12	$ 156,843.12
CR.		
By Salaries	$ 116,451.80	$ 135,697.59
Labor	649.48	248.25
Printing and distribution of publications	4,939.25	4,835.87
Stationery and small printing	3,577.39	855.57
Postage, telegraph, telephone, freight, and express	1,350.21	430.72
Heat, light, water, and power	1.15	27.70
Supplies	675.76	640.38
Library	156.75	69.45
Tools, machinery, and appliances	5.70	47.80
Furniture and fixtures	379.12	1,152.34
Scientific apparatus and specimens	159.20	
Traveling expenses	38,195.31	12,690.47
Contingent expenses	302.00	147.00
Totals	$ 166,843.12	$ 156,843.12

We, the undersigned auditors of the corporation, do hereby certify that we have examined the books and accounts of the Extension Division for the fiscal year ended June 30, 1920; that we have found the same well kept and properly classified; that the receipts from the Treasurer of the United States were $166,843.12, under the Act of Congress of May 8, 1914, and the corresponding disbursements $166,843.12, leaving a balance of nothing; that there have been expended as an off-set to the Federal Smith-Lever funds $156,843.12, State funds, for all of which proper vouchers are on file and have been by us examined and found correct.

And we further certify that the expenditures have been solely for the purposes set forth in the Act of Congress, approved May 8, 1914, and in accordance with the terms of said Act.

(Signed) W. H. RAGAN.
H. L. STEVENS.

(Seal)

Attest: A. F. BOWEN, *Custodian.*

Examined and approved as correct:

B. W. KILGORE,
Director of Extension.
B. R. LACY,
State Treasurer.

Summary Statement of Expenditures by Projects Showing Classification of Expenditures From All Funds, Except Those From the State Department of Agriculture, Used for Extension Work

	Total	Administration	Printing and Distribution of Publications	Farm Demonstration	Home Economics	Negro Boys' Clubs	Fairs and Exhibits	Farm Management	Agronomy Extension	Animal Diseases
Salaries	$360,170.37	$12,930.03	$	$187,250.67	$111,810.52	$1,560.00	$2,646.62	$ 250.00	$ 7,988.64	$ 4,295.00
Labor	897.73	146.25		50.40	337.40	23.70			61.73	
Printing and distribution of publications	9,775.12		9,775.12							
Stationery and small printing	4,432.96	1,612.66		1,788.40	347.70				172.60	
Postage, telegraph, telephone, freight, and express	1,780.93	581.12		317.77	367.99	5.01	25.00		170.29	
Heat, light, water, and power	28.85				3.70				25.15	
Supplies	1,316.14	339.56		339.86	216.95	26.40			218.23	
Library	226.20	144.25			23.27				57.68	
Tools, machinery, and appliances	53.50				9.06				24.80	
Furniture and fixtures	1,531.46	207.15		1,064.75	47.60	2.50	52.25		54.64	
Scientific apparatus and specimens	159.20			78.75						
Live stock										
Traveling expenses	50,885.78	350.46		30,746.84	7,725.82	664.61			1,636.41	
Contingent expenses	449.00			336.50	110.00					
Totals	431,707.24	16,311.48	9,775.12	221,973.94	120,999.95	2,282.22	2,723.87	250.00	10,410.17	4,295.00

Summary Statement of Expenditures by Projects Showing Classification of Expenditures From All Funds, Except Those From the State Department of Agriculture, Used for Extension Work—Continued

	Animal Industry	Markets and Rural Organization and Cotton Grading	Bee-keeping	Dairy Extension	Drainage Extension	Horticultural Extension	Plant Diseases	Farm Forestry	Farm Engineering	Farm Meetings
Salaries	$5,527.12	$ 9,176.34	$ 339.99	$3,847.14	$1,020.81	$ 2,490.04	$ 2,516.66	$2,158.31	$2,033.28	$2,129.20
Labor		277.25					1.00			
Printing and distribution of publications										
Stationery and small printing	165.32	346.28								
Postage, telegraph, telephone, freight, and express		292.00		20.75						
Heat, light, water, and power							1.00			
Supplies	17.33	66.06								
Library		1.00				91.75				
Tools, machinery, and appliances	14.00	4.20								
Furniture and fixtures		102.57				1.50				
Scientific apparatus and specimens										
Live stock							80.45			
Traveling expenses	3,193.81	1,587.42	125.11	3,353.37	339.27	815.49	1,147.17			
Contingent expenses		2.50								
Totals	8,917.58	11,855.62	465.10	6,621.26	1,360.08	3,398.78	3,746.28	2,158.31	2,033.28	2,129.20